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SOME CONSIDERATIONS IN THE TREATMENT OF WOUNDS.[1]

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PRIOR to the war of 1914-1918, civil surgery appeared to be well on the way to the conquest of wound sepsis; but with the advent of war conditions most wounds suppurated, and septicæmia, pyæmia, gas gangrene and tetanus were common sequelæ. Surgeons who were quite unacquainted with these conditions were called upon to treat them, and thus amputation became the common operation and the death roll was appalling. Gradually the French methods of free drainage, abundant covering, complete immobilization and infrequent dressing were introduced, and later Carrel introduced intermittent irrigation with hypochlorite solutions, and the British introduced the "lymphagogue" method chiefly with hypertonic saline solution.

After the introduction of these methods a big advance was made in excision of wounds with any necessary *débridement* and later the acridine dye antiseptics proved most helpful, the chief of them being acriflavine and flavine.

Since that period and until the present war the treatment of contaminated or infected wounds has been influenced by three major developments. (i) The first is the continued advance of bacteriology and the appreciation by surgeons of its application in the treatment of wounds. (ii) The second is the introduction of the sulphonamide group of drugs. (iii) The third is the popularization of the French method of infrequent dressings and prolonged immobilization in the treatment of established infections. In the post-war period Winnett Orr extended the method to the treatment of osteomyelitis, and during the Spanish civil war Trueta developed it in the treatment of compound fractures and other wounds caused chiefly by bomb splinters in air raids.

In wounds sustained under war conditions healing by first intention can never be anticipated unless measures are taken to render them fit for such healing, for this ideal method of repair takes place only in clean wounds. Whenever there is a residue of infection or a relic of necrotic tissue, the wound will always break down. Once the protective skin has been injured, any variety of organism may enter the deeper tissues. The great saving grace is that, except in violent and fulminating infections, there is ordinarily a "lag period" of five to twelve hours between the time the wound is sustained and the time when the implanted infection assumes a dominating position, and it appears now that this lag period can be increased by prophylactic chemotherapy. Provided the patient can be brought in and rendered fit for surgical measures during this lag period, there is a chance of securing first intention healing, or at least of inhibiting septic infections.

The fundamental requirement for success is a good blood supply, to secure which all lacerated or devitalized tissue, blood-clot and foreign bodies must be removed. Even if the wound cannot be closed, it allows of disinfection and the development of protective granulation tissue, the disturbance of which in subsequent dressings must be guarded against, so that virulent and invasive bacteria may be kept from the underlying tissues.

When a wound has become infected despite all precautions, judicious surgical measures must be supplemented by a number of general measures designed to augment both the general resistance of the patient and the local resistance of the tissues in the wound area. Chemotherapy intelli-

[1] A post-graduate lecture, delivered at Sydney on May 1, 1941.

gently used is a valuable adjuvant. As for local applications, care in selection is essential, so that they may prove more injurious to the infecting organisms than to the tissues involved.

A great deal of inquiry has been made in the past eighteen months as to the sources of infection, and stress has been laid on the necessity for the segregation of patients with established wound infection, for the strictest supervision of asepsis in dressing trays, instruments and dressings as well as of the nurses or orderlies entrusted with such work, and for the elimination from the staff of known carriers of various infections, especially streptococcal infections, which are the arch enemy. Overcrowding must be avoided and repeated dressings must be reduced to the barest minimum. In one hospital it was found that the incidence of third degree burns infected with *Streptococcus pyogenes* rose from 11% at the time of admission to hospital to 66% by the sixth day. Manual transference by the dressers plays the major part; but evidence has accumulated that the air and dust of wards are probable sources of infection.

The Antiseptic Treatment of Wounds.

There has been a pronounced revival of the antiseptic treatment of wounds, and Professor Garrod has written comprehensively on this subject; as a result, and in view of experimental and clinical investigation, it seems that we must recast some of our ideas as to antiseptics and their use in surgery.

The action of antiseptics depends on three simple factors: (i) the concentration, (ii) the time of action and (iii) the temperature of the solution. Clinically, however, two other important factors must be considered: (*a*) the behaviour of antiseptics in the presence of organic matter and (*b*) their action on the tissues of the body.

Concentration.

Dilution affects different antiseptics to vastly different degrees; for example, a one in 100 solution of phenol kills most bacteria in a few minutes, but a one in 150 solution takes hours. This holds for most of the coal-tar antiseptics, and care must be taken that they are used in concentrations known to be within their effective range. On the other hand, the mercury salts and many of the dyes are only gradually diminished in efficiency with progressive dilution.

Time of Action.

Concentration and time of action are interdependent to a large extent. The most rapidly acting antiseptics are the halogens and those liberating nascent oxygen. Salts of mercury afford an example of the opposite extreme, and this slowness of action is characteristic of the salts and compounds of the heavy metals and the dyes. A rinse in a solution of perchloride or biniodide of mercury is ludicrously inadequate treatment, although it is often recommended and employed.

Temperature.

In general an increase in temperature accelerates disinfectant action; this is particularly so with the phenols but not very pronounced with the halogens. But in practice this is of little concern, for the temperature of solutions applied to wounds has only a limited range and very soon approximates that of the body. Still, it is wise to apply antiseptics warm rather than cold.

Reaction to Organic Matter.

The killing of bacteria is due to a chemical combination between the antiseptic and the constituents of the bacterial cell; this occurs also with other materials which may be present, and especially applies to the plasma proteins and blood cells or those in an inflammatory exudate. The ideal antiseptic is therefore one which has a greater affinity for bacterial protoplasm than for bodily tissues or exudates. This reaction to organic matter must be taken into consideration in the selection of various antiseptics, and will be mentioned later.

Toxicity to Living Tissues.

All antiseptics are to some extent toxic, but the degree varies greatly. (i) The grossly caustic action of strong acids or alkalis precludes their use except as deliberate escharotics. (ii) Those reagents which precipitate protein are necessarily harmful to the tissues—for example, spirit, formaldehyde and perchloride of mercury. (iii) Some antiseptics cause no gross damage, but may inhibit growth and other functions of the living cell, and hence prevent leucocytic activity and delay repair. (iv) One class of antiseptic only will kill bacteria without effect on cellular activity.

Types of Antiseptics.

Of the antiseptics used in the treatment of wounds we have six classes, if we exclude acids which are either too caustic or too feeble as disinfectants—for example, boric, benzoic or salicylic acid, *et cetera*. The single exception is acetic acid, which in a 1% solution is a specific for infection by *Bacillus pyocyaneus*.

Oxidizing Substances.—Chief of the oxidizing substances are peroxide of hydrogen and permanganate of potash; but although they are rapid in action and of low toxicity to the tissues, the principal drawback to their use lies in the fact that the nascent oxygen combines instantly with almost any organic material, and thus bacteria are likely to be spared in any medium rich in proteins.

The Halogens.—Chlorine and iodine have very rapid action and high efficiency, but are somewhat toxic and are apt to be totally inert in the presence of any organic material, with which they combine rapidly unless they are present in excess or are patiently and frequently renewed. The chief value of iodine, then, is for skin preparation. Chlorine is used chiefly as eusol or Dakin's solution. It is interesting to note that the addition of a chlorine ion to the cresols notably increases their activity (for example, "Dettol"). Iodoform, with its penetrating odour, has so long been associated with the idea of antisepsis that the fact of its being inert is not credited. "It is the supreme illustration of the force of an appeal to the senses only rivalled by so-called urinary antiseptics which impart some startling colour to the urine." When embedded in an oily paste it is incapable of preventing any bacterial growth, and "B.I.P.P." as an antiseptic is quite inert.

Heavy Metals.—Mercury, silver, copper and zinc compounds are the chief heavy metals used. The widespread use of mercurial salts is based on a partial misconception of their powers; they are slow in action, form relatively insoluble and inert compounds with protein, and have only a superficial action on the bacterial cell, which may recover. On the whole, they are to be condemned as antiseptics for wounds, since to be effective they would be required in such concentration and quantity that grave damage to the tissues would result. However, the position of some of the more complex compounds of recent introduction is not so clear—for example, "Metaphen", merthiolate and phenyl mercuric nitrate—but blood is more inimical to their action than is serum, so that they are probably more suitable for application to the intact skin and superficial abrasions or infections than for the depths of a wound. "Mercurochrome" is practically useless, as in a neutral or alkaline medium it is a very weak disinfectant and is incapable of sterilizing skin, superficial wounds or infected blood.

The Alcohols.—The optimum bactericidal concentration of ethyl alcohol is 70%, and in the pure state or in lower dilution it loses almost all activity. It coagulates protein, so it is toxic and diminishes the activity of other antiseptics dissolved in it. On the whole, spirit or spirituous solutions have no place in the treatment of wounds.

Coal-tar Derivatives.—The usual antiseptics among the coal-tar derivatives are unsuitable for application to wounds, as they are of low bactericidal power if used in such dilution as to have a minimal toxic effect on the tissues. However, halogenation of the cresol or xylenol group increases their activity, and such substances as "Dettol", "Izal" or "Cyllin" have a place in the treatment of wounds, provided that they are used in a suitable dilution (about 5%) so as to offset the loss of some potency

in the presence of organic matter. They do not coagulate protein and act fairly rapidly.

The Aniline Dyes.—Most of the aniline dyes are bactericidal to some extent. The most powerful are brilliant green and the violet dyes. Bonney's blue is an example, but it would be more efficacious if made up in water instead of in 50% spirit. The action of these dyes is slow, but it is notably accelerated by an increase in temperature, and they can be used in very high dilutions. The presence of blood or serum inhibits their action to some degree. They are toxic to some extent, especially brilliant green, and are comparatively inactive against Gram-negative bacteria. While dyes of this type have strong claims for consideration in the treatment of recent wounds, they are not so suited for those with established infection.

The Acridine Dyes.—The acridine dyes are otherwise known as the flavine group. Their action on bacteria varies, but they are rather more effective against streptococci than against staphylococci or *Bacillus coli communis*, and have no action on *Bacillus pyocyaneus*. Their bactericidal activity persists to a degree unequalled by any other antiseptic in the presence of either serum or blood, and they are the least toxic of all potent antiseptics. They neither kill fibroblasts nor inhibit the activity of leucocytes. They alone have shown consistently their capability of preventing infection in experimental wounds in animals. They disinfect wounds in short periods of time in concentrations of about 0·2% only, but with time the necessary concentration diminishes steadily. Proflavine is the antiseptic of choice in this group, because of its minimal toxicity.

The Selective Action of Antiseptics.

Staphylococci are extremely susceptible to violet dyes and streptococci a little less so, while most Gram-negative bacteria are highly resistant to these dyes. The acridine dyes exert their most powerful effect on hæmolytic streptococci. *Bacillus pyocyaneous*, which offers resistance or even flourishes in most antiseptics, succumbs to a 1% solution of acetic acid, which most other bacteria resist.

The use of antiseptics not wholly lethal to certain strains of bacteria leads after a few days to the multiplication of their more resistant members. It is therefore advisable to discontinue the treatment of any wound with an antiseptic which does not achieve its expected result after several days and to substitute some other form of treatment. In general the use of any solvent other than water entails loss of antiseptic power, and if possible the solution should be rendered isotonic. The greatest use of antiseptics in wound treatment should be as a prophylactic in recent wounds during that lag period before infection becomes established.

It cannot be expected that complete disinfection can be secured, but on many occasions infection can be reduced to a minimal degree with which the tissues can deal, and in any case exposure to certain antiseptics, if only for a few minutes, can greatly reduce bacterial virulence.

Prophylactic Treatment with Antiseptics.

Two policies may be adopted in the prophylactic treatment of wounds: (i) an attempt to secure complete disinfection without regard to the effect on the tissues, and (ii) an attempt to secure adequate disinfection with minimal damage to the tissues. With regard to the first, the extreme is the use of pure phenol to disinfect a needle-prick or a small track; but methods so drastic leave necrotic tissue liable to further infection and in any case slow to heal. Less grossly toxic but rapid in action are "Cyllin", "Izal" and "Dettol", which deserve serious consideration, as they act rapidly even in the presence of blood and have a minimal toxic effect on the tissues. The dyes and acridine compounds act in blood, but more slowly; the halogens act quickly, but not in blood; and mercury compounds are slow in action and greatly hindered by blood.

The alternative policy is to try to secure adequate disinfecting power with minimal toxicity to tissues. No other class of compounds can approach the acridine group for such action. That relatively prolonged action is necessary to secure adequate effect is their main drawback, and in ideal treatment the solution requires to remain in the wound for an hour or so. The use of packs is offset somewhat by the affinity of cotton for these dyes, leading to retention of the antiseptic in the dressing. For punctured wounds the injection of solutions of the acridine compounds may be used safely, and thorough infiltration of the tissues can be carried out.

It is well to remember that where an antiseptic cannot reach it cannot act, so that in extensive, deep and irregular wounds, or in the presence of a retained foreign body, complete excision is demanded before any attempt it made to disinfect the wound.

In wounds with established infection antiseptics may be used in the process of mechanical cleansing, to aid separation of sloughs, as deodorants or to inhibit access of further infection.

Profuse fluid exudation can be induced by the application of hypertonic solutions of the salts, of which sodium sulphate in saturated solution is the best. Whatever antiseptic treatment is adopted, it should be strictly limited in duration, and it is futile to continue for weeks on end with the same solution; the only exception is the Carrel-Dakin method with a weak hypochlorite solution. The use of antiseptics requires careful consideration, constant supervision and intelligent application, and it is to be kept constantly in mind that it is supplementary to and can never replace a preliminary *débridement* or any other established surgical treatment.

The Treatment of Burns.

It is impossible to discuss more than general principles in the treatment of wounds in the time allotted for this discussion, but one form of wound in this war is of such common occurrence that it requires special consideration; it is burns, which are just as much wounds as any that are caused by missiles. The use of flame-throwers, the flash of exploding shells or bombs, fires started by incendiary bombs or after aeroplane crashes, all these make burns one of the most important of air-raid and war casualties. In most cases the exposed parts are affected, namely, the face and hands, and when the clothing has caught fire any part of the body may be involved.

The most commonly used treatment has been the application of tannic acid in solution or in jelly. All tanks carry first-aid tannic jelly outfits as being the most practicable in such vehicles.

When large numbers of patients have severe burns, the slower methods of coagulation cannot be applied, and an immediate tan is a great advantage. The aim of treatment of these patients is to provide a dressing which is antiseptic and pain-relieving, and one which checks undue exudation of serum. These objectives can be achieved only by the application of some substance which will form a coagulum over the affected area, even at the expense of some increase of damage to the underlying tissues. The use of tannic acid has had extensive trial for some years, but repeated applications of a freshly made 5% aqueous solution are required. In an effort to hasten the action use has been made of the application of a 10% solution of silver nitrate to the burnt area prior to the application of the tannic acid. The resultant crust is not the thick crust of the repeated tannic applications, and moulds itself more readily to the changing contours in the region of joints. Necessarily this treatment must be applied under general anæsthesia, which is best obtained with an anæsthetic agent given intravenously and continued later with nitrous oxide and oxygen. Brilliant green has been used to paint the edges of the tan daily, as infection is apt to spread from the surrounding skin. A solution of 1% brilliant green in 30% alcohol has been advised. Of relatively recent introduction is the aqueous solution of 1% brilliant green, 1% methyl violet and 0·1% acriflavine, known as triple dye, which conforms to the essentials previously laid down for the treatment of burns, and although it forms a crust it is not the very solid crust of tannic acid and sepsis is not so likely to develop. Its greatest convenience is that it is an aqueous solution,

which keeps well, is easily applied on swabs, gives quick relief and has a powerful non-toxic antiseptic action. In the cleansing of burnt areas exercise great gentleness whenever possible using saline solution for swabbing, unless the skin is coated with oil, when a weak solution of ether soap in water is best for washing—not scrubbing. The region surrounding the burn is important, and must be disinfected. As far as general treatment is concerned, it has been found that plasma given intravenously is better than the transfusion of whole blood, and that a diet rich in protein is essential.

Splinting of limbs may be necessary, and after the œdema has subsided a plaster cast may be helpful. As soon as possible skin-grafting is indicated, and is especially valuable in the prevention of contractures. Sulphanilamide therapy has given excellent results; the doses recommended as a routine measure are three tablets at once, then two tablets every four hours for forty-eight hours, followed by one tablet every four hours for another forty-eight hours; care is taken to omit no dose, even at night, so as to keep up an even concentration of the drug in the blood stream. Later, when the tan protective layer lifts and granulating surfaces are exposed, these are best dressed with "Vaseline" gauze until the surface is ready for skin grafting.

The Sulphonamide Compounds in the Local Treatment of Wounds.

A great deal of experimental work has been carried out, especially in the prevention of gas-gangrene infections, and reports of the use of the sulphonamides in recent open wounds have been so satisfactory that it seems as if a new field has been opened in the treatment of war wounds. Frank Hawking, of the National Institute for Medical Research, has shown that the local application of sulphonamides will give protection against *Clostridium welchii* and *Clostridium septique*, but only to a slight extent against *Clostridium œdematiens*. The most potent compound is sulphathiazole, and local treatment is more effective than systemic treatment. Hawking concludes that the experimental results justify the local use of the sulphonamides, not only as prophylactic against gas-gangrene, but also against streptococci. He points out that such treatment should be a supplement to correct surgical measures and not a substitute for them, and that serum augments the effect of the drug.

Sulphanilamide was superior to sulphapyridine against *Clostridium welchii*, but had no action against *Clostridium septique*.

It is worthy of note that the sulphonamides have no action in preventing or delaying the development of tetanus.

Sulphanilamide is absorbed from wounds very quickly—that is, in about twenty-four to forty-eight hours—and gives a high but transitory concentration in the wound fluids (1,500 milligrammes per 100 cubic centimetres). Sulphathiazole is absorbed very slowly (five or six days), and gives a very low concentration in the wound fluids (104 milligrammes per 100 cubic centimetres), while sulphapyridine is the slowest to absorb (seven to ten days), giving a concentration in the wound fluids of only 42 milligrammes per 100 cubic centimetres.

As regards the actual technique of application, Major A. C. King recommends first a complete *débridement* and absolute hæmostasis. Twenty grammes of powdered sulphanilamide are the maximum dose employed. It is essential to introduce the drug into every corner and pocket of the wound, so that just to pour it into the wound is not enough. If there are any recesses it is best to introduce a tablet by forceps and crush it in the depths of the wound; then the powder is dusted over the accessible areas and the cavity is packed. A covering of "Vaseline" gauze is applied, and over this "Elastoplast" or zinc oxide strapping is placed so as to draw the wound edges together as much as possible. Cotton wool is superimposed and bandaged in place. The dressing is not disturbed until the fifth day, when delayed primary suture can usually be undertaken.

Patients with recent wounds invariably did well. At one stage a number had to be treated after infection had become established, and contrasted with patients who were treated by means of a flavine pack, their general condition was much better within twenty-four hours, the toxæmia being reduced, the pulse rate slower and pain and discomfort diminished.

It may be taken that sulphanilamide absorbed from a wound is excreted in from three or four days, and that oral treatment should be begun on the fourth day. A dose of 0·5 gramme should be given every four hours so as to maintain the optimum blood concentration of two milligrammes per 100 cubic centimetres. If it is ever desired to accelerate the action of this drug when given by mouth, it should be dissolved in a hot 1% solution of citric acid sweetened with glucose.

Time alone can show whether a further recasting of ideas may not be necessary as regards the use of the sulphonamides rather than the standard antiseptics in the immediate treatment of wounds.

Acknowledgements and Bibliography.

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THE TREATMENT OF VARICOSE VEINS AND THEIR COMPLICATIONS.[1]

By A. F. HOBBS,
Adelaide.

THE treatment of varicose veins has never been entirely satisfactory, as is witnessed by the numerous methods which have been used from time to time. Most of these methods have given successful immediate results, so that new methods have been enthusiastically seized upon; but it has been found, with the passage of time, that there have been recurrences in a large percentage of cases. This statement applies to injection therapy, especially when this has been used indiscriminately, and the poor late results of this and also of other methods of treatment have been due to the fact that they have been applied without careful consideration of the underlying pathology and without the introduction of modifications of treatment to meet differences in the pathological condition present.

Injections for varicose veins were used as early as 1853. Perivenous injections were used toward the year 1880. This method is the same in principle as that used at present in the injection of treatment of hæmorrhoids.

[1] Read at a meeting of the South Australian Branch of the British Medical Association on February —, 1941.

Since 1922 injection treatment for varicose veins has been popular, and until recent years most of the advances in this method were concerned mainly with the solutions used.

Ligation has been used in the treatment of varicose veins since it was first performed by Celsus in the first century. He ligated the vein above an ulcer. Recent modifications in the use of ligation have been chiefly in the direction of performing the ligation higher and higher in the leg. Lower ligation merely shut off the backflow of blood above one point. Collateral circulation would usually form round the obstruction and the condition would recur. This also applies to ligature or injection of the veins above an ulcer.

The essential facts in the anatomy of varicose veins are as follow. The internal saphenous vein opens into the femoral at the saphenous opening; it usually receives the three superficial veins—the superficial external pudic, the superficial epigastric and the superficial circumflex iliac. It communicates with the deep veins by veins which perforate the deep fascia, and there are valves guarding the sapheno-femoral junction along the course of the saphenous vein, and others preventing reflux of blood from the deep veins to the saphenous system.

The short saphenous vein passes up the calf of the leg and opens into the popliteal, the opening being guarded by a valve, and there are also valves along its course.

Ætiology.

I shall not now discuss in detail the ætiology of varicose veins. When dilatation of the vein occurs, valves become incompetent and the condition tends gradually to extend. An important result is the reversal of flow that has been shown to occur in the dilated veins. This has been demonstrated by radiography after intravenous injection of radio-opaque substances.

The reasons for recurrence after treatment by injection are mainly the following: (i) recanalization of the thrombus, which has been shown histologically to occur; (ii) development of varicosities in other tributaries of the short or long saphenous veins. Some authorities consider that recanalization occurs in a high proportion of cases; but probably the more important cause of recurrence is the development of varices in uninjected tributaries. However, recurrence from either of these causes will be best prevented by a combination of ligation and injection, and the ligations may require to be multiple. It is necessary then to know as accurately as possible which valves are incompetent.

Clinical Examination.

I shall not attempt to discuss clinical examination in detail, but shall give a short description of the tests used in the clinical examination of a patient with varicose veins.

The Trendelenburg Test.

The original Trendelenburg test was performed by raising the leg to empty the veins, then suddenly lowering the leg. This resulted in sudden filling, if the valves of the saphenous vein were incompetent. A modification is usually used. A band, sufficiently tight to constrict the superficial veins only, is applied at the upper part of the thigh. If when the patient stands the veins below fill suddenly on the release of the tourniquet, the result is positive. If the veins fill only after two or three minutes (from the arterial side), the result is negative. If before the tourniquet is released the veins fill partially in about half a minute, the response is termed "double". The double response to the Trendelenburg test indicates incompetency of the valves of the communicating veins which connect the superficial with the deep circulation, and in this case mere ligature of the saphenous trunk with injections will not be satisfactory.

Perthes's Test.

In Perthes's test the saphenous vein is obliterated in the thigh and the patient is made to walk about. The muscular activity forces blood out of the deep veins, thus sucking the blood out of the superficial veins; but if the communicating valves are incompetent, the superficial veins remain full. This test is used in cases in which the Trendelenburg test produces a positive response.

The Comparative Tourinquet Test.

Ochsner and Mahorner[1] have introduced a test which they describe as the comparative tourniquet test for determining more accurately the competency of the valves of the communicating veins. The patient walks at a normal gait and the prominence of the veins below the knee is noted. The tourniquet is then applied to the upper part of the thigh, tightly enough to compress the superficial veins. Subsequently the tourniquet is successively applied to the middle and lower thirds of the thigh and to the leg below the knee. When the tourniquet is below the lowest communicating veins whose valves are incompetent, the veins of the lower part of the leg become smaller after walking. This test also indicates whether the valve guarding the opening between the short saphenous and popliteal veins is competent. When the results of this test were compared with those of the Trendelenburg test, it was found that there was a close parallelism between the results of the two tests, but that the former demonstrated more accurately a leak through the communicating veins, and it is considered that this is of great clinical importance.

Test to Demonstrate the Patency of the Deep Veins.

The following test is used to demonstrate the patency of the deep veins. The superficial veins are obliterated by an elastic bandage from toes to knee, and the patient is made to walk about for half an hour. If the deep veins are patent, the patient remains quite comfortable and any previous pain may subside; but when the deep veins are not competent, increasing discomfort arises. However, this test is really unnecessary, because if the patient has pronounced varicosities and has been up and about, and if there is not much œdema and the foot and lower part of the leg are not congested, we can assume that the deep circulation is satisfactory. Also in serious obstruction of the deep veins a compensatory enlargement of the veins across the lower part of the abdomen may occur.

In the clinical examination it is useful to record the uppermost points of enlargement of the main varicose trunks, as these usually correspond to "blow-out" sites—that is, levels at which the communicating veins are incompetent and localized dilatation of the superficial veins results.

Treatment.

Before 1930-1932 most clinics were treating varicose veins by injection only. This gave a high percentage, about 60%, of recurrences. It became increasingly evident that there were recurrences not only in advanced cases, but also in a considerable proportion of cases of less extensive varices in which there was a positive response to the Trendelenburg test, after an apparently satisfactory thrombosis had been obtained. On this account the procedure of ligation of the saphenous vein as a preliminary to injection was introduced. This operation often results in spontaneous thrombosis of varying extent, in some cases all the varices being apparently thrombosed. This thrombosis may progress for a week or ten days, but tends to become stationary after a period of at the most about three weeks; hence, in order to reinforce the spontaneous thrombosis, a period of three weeks should be allowed to elapse after operation before injections are given into the distal segment of the vein after double ligature and division. This, usually supplemented by further injections later, is necessary, as the clot which often forms after ligature alone, although it may be extensive, is not necessarily permanent.

The indications for ligature have gradually been extended. At first it was used only in cases of recurrence following injection, and upon large veins with incompetent valves in which thrombosis could not be satisfactorily produced by injection. Now injection treatment alone is

probably strictly indicated only in mild cases, especially in cases of localized varices and in those in which the response to the Trendelenburg test is negative or only weakly positive. In these cases the patient is at least relieved, and if there is a recurrence and the condition later becomes more severe, more radical procedures can be adopted.

Ligation combined with injection is indicated in all cases in which the valves of the saphenous vein are incompetent—that is, in all cases in which the response to the Trendelenburg test is positive. Ligation should always be performed high above all the tributaries of the saphenous system, because there is then less liability to recurrence through collateral veins. This includes a search for the three tributaries previously mentioned, which usually open into the saphenous vein. This is done by dissecting up the proximal segment after division until one is certain that no higher tributaries exist. The ligature is placed as near as possible to the sapheno-femoral junction. In cases in which the comparative tourniquet test reveals incompetence of the valves of the communicating veins, additional ligation and division are carried out below the level of the lowest communicating vein in the thigh with incompetent valves, or of the short saphenous vein in the upper part of the leg.

Patients with incompetent communicating veins theoretically need division of all such veins as well as ligature of the saphenous vein at its junction with the femoral vein. Practically it suffices to apply an additional ligature, either below the lowest incompetent valve or, if there are several "blow-out sites" at these situations, dividing any communicating veins met with in the operative fields.

Ochsner and Mahorner perform these secondary ligations from ten days to three weeks after the first, and do so even if the thrombosis from the first ligation has then extended below the level to be dealt with at the second operation.

It has been suggested by Lowenberg[12] that, immediately before the high ligation, the saphenous vein above the knee should be ligated and divided to limit the extent of the subsequent thrombosis and œdema, as the reaction is sometimes very severe. The combined ligation and injection, practically all authorities agree, should be carried out without the patient's being confined to bed; he should be instructed not to remain at rest without walking or at least exercising the leg for more than six hours at a time. This prevents extension of the thrombus into the femoral vein and reduces the liability to embolus formation. If the patient is confined to bed for twenty-four to forty-eight hours, active exercises during that time should be insisted upon.

In very persistent cases an operation has been recommended which consists in incising the deep fascia extensively below the knee and dividing the communicating veins as the fascial flap is dissected back. As most of the perforating veins pass to the posterior tibial veins, a curved incision on the inner side is used.

The results of ligation according to these principles are much better than those following simple ligature of the saphenous trunk at some distance below its termination. The relief of pain is good. The relief of signs of stasis (for example, swelling of the limb after standing, and varicose ulcers) is fairly good. The results, as far as removal of disfiguring veins is concerned, are only fair.

I do not propose to say much about the technique of injection, as the details are well known. With regard to the solutions used, a solution of quinine and urethane is probably the most used in this country and in England, while in the United States of America 5% or 10% sodium morrhuate solution is the most popular. I have had most experience with quinine and urethane and less with sodium morrhuate. Lithium salicylate in the form of "Lithocaine" is useful for the twin injection in large veins in which it is difficult to produce thrombosis. A good deal of research has been recently carried out in America with solutions of fatty acid salts other than sodium morrhuate. Sodium morrhuate is less toxic than quinine; like quinine, it produces a firm thrombus and its injection is painless. It has one disadvantage: some individuals are sensitive to it.

Several years ago, after I read an article in which it was recommended that a number of veins should be injected at one sitting, about ten cubic centimetres of 5% sodium morrhuate solution being used, I tried this procedure on several patients; they all complained of extremely unpleasant sensations for an hour or so after injection which could best be described as a feeling of impending disaster. They felt as if something dreadful was about to happen. Since then I have never used more than five cubic centimetres at one time.

Without reference to any particular solution, Smith,[13] of the Mayo Clinic, refers to allergic reactions which may produce sudden dilatation of the capillaries of the whole body. Erythema and pruritus lasting fifteen to twenty minutes have been described. Death has been reported after injection; but this has probably been due to an idiosyncrasy to the sclerosing chemical.

With quinine and urethane, giddiness and cramp-like pain in the abdomen are common and, if severe, indicate the subsequent use of other solutions, such as sodium morrhuate.

Recently I had a patient who showed an extraordinary allergic response to the injection of 0·5 cubic centimetre of quinine and urethane solution. It consisted in the development within two minutes of a sensation of grittiness in the eyes, followed rapidly by intense conjunctival injection with extensive œdema of the eyelids and conjunctivæ. A subsequent injection of sodium morrhuate was followed by exactly the same effect, but slightly less intense. It was thought that possibly the tap-water in which the syringe was boiled might be responsible; but this was excluded as a cause by a third injection of quinine and urethane solution, when a similar reaction developed.

With reference to the question as to whether veins should be injected when full or empty, there are many conflicting views. Many methods have been devised to enable the needle to enter a full vein and the injection to be made into an empty one. The simplest method is to raise the leg, after applying and inflating a sphygomanometer band and relaxing this after the needle has been inserted. However, the thrombus obtained by the injection of a full vein seems quite satisfactory, and several observers believe that a better thrombosis follows injection into a full vein. My own experience supports this view.

The chief disadvantage lies in the leakage into the perivenous tissues that is apt to occur. This commonly occurs when the patient is in the standing position. Escape of fluid should be followed immediately by injection of saline solution through a fresh needle and syringe.

It is desirable to cause thrombosis of only short lengths of vein with each injection. An injection in the thigh, for instance, will cause thrombosis for a considerable distance below. This will consist largely of soft clot. It prevents further injections in the immediate future, but is not permanently occluding. Therefore one injects at a lower level first, each successive injection being made at a higher level.

Contraindications to Treatment by Injection or Ligation.

The following are contraindications to treatment by ligation or injection: (*a*) Advanced debility or senility. (*b*) Advanced arterial disease, such as severe arteriosclerosis or Buerger's disease, on account of the risk of gangrene. (*c*) Causes such as pelvic tumours giving rise to venous obstruction. (*d*) Thrombosis of deep veins, if extensive and associated with œdema and induration of the leg. In the case of a deep thrombosis, superficial dilated veins may have developed as collaterals. If they are definitely varicose they are useless in carrying on the circulation, so that the contraindication to injection does not lie in their function as collaterals, but in the state of œdema and induration which is present. Injection in these cases is likely to cause additional periphlebitis and even fresh ulceration. (*e*) A superficial phlebitis in veins not previously varicose. This is a definite contraindication to active treatment by injection or ligation.

Superficial thrombophlebitis in veins previously varicose is not a contraindication. This will be referred to later.

With reference to pregnancy as a contraindication, if varices existed prior to the pregnancy one may proceed with the treatment, but if new varices are forming it is just as well to withhold treatment until after delivery. However, if the condition is causing much disability there is no objection to treating it in the usual way. Quinine solutions should not be used.

The Treatment of Varicose Veins in the Presence of Thrombophlebitis.

According to several authorities, the prevalent belief that existing superficial thrombophlebitis precludes injections for several months is erroneous. They assert that unless the phlebitis is generalized, with systemic manifestations, such as fever and malaise, injections are indicated. They are free from unpleasant sequelæ. The initial dosage should be smaller than usual, since the reaction is more severe. The dosage is increased according to the reaction.

Biegeleisen[4] says that the very common condition of phlebitis in varicose veins is usually subacute or chronic, and that it often results in a permanently damaged leg. He recommends treatment of the inflamed varicose veins by sclerosing them as soon as possible, for the following reasons: (i) Phlebitis in varicose veins rarely heals spontaneously. (ii) The danger of embolism is greater in untreated cases. (iii) Temporizing means permanent lymphatic and tissue damage. (iv) Sclerosing injections can safely occlude the dilated infected vessels. He has treated 300 patients with uniformly good results.

Edwards[5] treats similar patients by high saphenous ligation and injection of residual varices if required. He allows walking, as he considers that rest favours the propagation of the thrombus and increases the likelihood of embolism. In short, he treats the varicose veins present in the usual manner except that smaller doses of sclerosing solutions are employed.

The Treatment of Varicose Ulcers.

In the treatment of ulcers it is necessary to control the stagnation of blood in the vicinity of the ulcer and to provide an improved supply of blood. This may be accomplished by abolishing the varicosities by the usual methods of treatment, by applying even pressure to the leg, or by applying intermittent pressure to the ulcer area with the leg supported, as in the treatment with a sponge rubber pad of the ambulatory patient.

I have generally avoided injection or ligation until the ulcer is clean and healing has commenced. Otherwise there seems to be some risk of causing an infective thrombophlebitis which might give rise to embolism. In the earlier stage of varicose eczema, often with pruritus, treatment of the varices gives rapid relief.

Ulcers with much inflammation require fomentations and rest for a few days before pressure is applied. It is remarkable how infected dirty ulcers will improve with the application of Unna's paste and a moderate amount of rest, even if the condition is too painful for pressure to be applied, the bandage being applied quite loosely. This conforms with the results of treating infections generally by closed methods, instead of using frequent dressings with antiseptic applications.

In ulcers arising from trauma one cannot expect healing to commence at once, and if "Elastoplast" or Unna's paste is applied, one must expect after the first week or so to find that the ulcer has even increased in size because sloughing has still continued.

With regard to the type of pressure bandage to be applied, this must be varied to suit the individual. I think that Unna's paste or a convenient substitute, "Viscopaste", is the most generally useful. In many cases "Elastoplast" causes irritation of the skin and production of fresh superficial ulceration. This certainly generally heals with continued application of "Elastoplast", but it occurs much less frequently with Unna's paste. The latter should always be used in preference to "Elastoplast" if an eczematous condition is present.

Pressure over the ulcer with sponge rubber often remarkably hastens healing. I cut the sponge rubber slightly larger than the ulcer, apply zinc cream to the ulcer and a gauze and wool dressing, bandage the rubber in place and apply "Elastoplast" over it. It is important, as emphasized by McPheeters,[6] that the patient should do a considerable amount of walking while this treatment is being used, as otherwise much pain will occur and the effect of the intermittently varying pressure which occurs with walking will be lost. Most varicose ulcers can be healed by these methods, but many recur if the varicosities cannot be cured or if scarring and induration remain.

Skin grafting is often useful. Pinch grafts have been most commonly used, but Thiersch grafts can be employed in some cases. Complete excision of some indolent ulcers associated with much scarring and induration has been recommended, with subsequent skin grafting, either immediate or delayed; but I have had no personal experience of this method.

It would be necessary to excise the ulcer widely and to include in the excision all scarred and indurated tissue, in many cases a very extensive procedure.

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THE RELATIONSHIP BETWEEN DOCTOR AND PATIENT.

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STUDENTS of science, as well as students of philosophy, are very early made aware that one of the greatest enemies to truth is the lack of ability to think clearly. And perhaps the greatest obstacle to clear thinking is the easy acceptance of a phrase or a formula, which purports to provide an explanation of a phenomenon or a solution of a problem, without the prior formation of any clear mental picture of what that phrase or formula itself actually means. In our own sphere of medicine, we see only too often some felicitous description exercising so hypnotic an influence that it is carried on year after year, from one text-book to another, until finally it is discovered that the description, felicitous as it is, carries an entirely false meaning, or even no meaning whatever. In business and in politics, the readiness of the human mind to respond to an arrangement of words which conveys an attractive impression, without pausing to ask what is the basis or the underlying implication of the words actually used, is widely and gladly seized upon by those who hope to profit from the form of propaganda or of advertising. How many millions of gallons of mixtures, more or less innocuous, are swallowed yearly to the sole profit of their makers, on the strength of the bald but often repeated statement that they "tone up the system" or "purify the blood"? What wars have been fought under the banners of high-sounding phrases, the meaning of which, if any exists, is entirely beyond the comprehension of those who follow the banners!

Students of mass psychology know well the power of the slogan, and we all, being men and women, are susceptible to its influence so long as it appears to lead us in the

direction in which we ourselves desire to go. Some slogans do actually stand examination. Some of them do in fact present in simple form a truth which is of value to the human race, or to the particular herd of it to which we belong. But even these are generally given an artificial appearance as the masses of the people adhere to them. Each man and woman gives to the interpretation of them some tinge of their own favourite colour, which much changes the original clarity of the truth they were formulated to propound. Very few people tarry to analyse and examine an attractive slogan. The Conservative Government in England was swept away in 1906 by the battle-cry of "No Chinese slavery". Certainly not one in a thousand people out of the millions of electors could have even any distant comprehension of the conditions governing, the reasons for or the possible future effects of, the importation of Chinese coolies into South Africa. In all measures of political reform an attractive slogan is a necessity, because 90% of the people called upon to make the decision can have no real understanding of the issues involved, and it is necessary to appeal to their emotions rather than to their reasoning powers.

In a movement for the reform of method in one of the learned professions this should not on the face of it be necessary. The higher standard of education enjoyed by the members of the profession, and their personal acquaintance with the issues involved, make the appeal to their reason a possible and useful one. When the profession has itself made up its mind on the proposal, it will still be necessary to use the old banner headings of emotional appeal in putting it before the members of the public for the formation of their judgement upon it. But among ourselves, when we are discussing an innovation of prime importance to us, clear thinking is essential; and it would be dangerous to our cause, as well as unworthy of our dignity, for us to accept any verbal formula without first subjecting it to a close critical scrutiny.

With this preamble, I propose to submit to you for such scrutiny, a phrase much in use nowadays among those people who are sufficiently interested in medical reform to take the trouble to discuss it. It is: "The importance of maintaining the close personal relationship between doctors and their patients, which now exists."

The obvious primary criticism of this phrase is that it groups together too many different aspects of the relationship into one entity. It over-simplifies a complex phenomenon. Our patients may regard us from many angles, and see us in many differing lights. They may, for example, regard us as sellers of medical remedies, or in the higher light of technical experts to put right faults in their bodies. They may again look on us as the supposed repositories of a scientific knowledge denied to themselves. We may appear to them as priests of a cult of holy mysteries, or in the light of friends to whom they may bring their personal confidences. They do, in fact, in different circumstances, regard us in all these various lights. On our part we may look on our patients as sources of income, as "cases" of medical interest, as fools to be taught or as friends needing help; and we do in differing moods and in changing circumstances view them from all these standpoints. A relationship so complex does indeed need some analysis, and from that it will be found, as it is in nearly all such inquiries, that of its components some are of the type that are far better discarded, even if others may prove to be worthy of retention and cultivation.

Dealing first with the financial aspect of this relationship, I think it is correct to affirm that in this there lies the main source of our problems. It is the chief cause of the conflict between the profession and the public. That such a conflict does exist should not, I think, need very much substantiation either to a lay or to a medical audience. Those who wish to read the views of an intelligent layman on it, will find it very well and clearly set forth in Bernard Shaw's preface to his play "The Doctor's Dilemma". It is this underlying conflict which supplies the reason for the fact that, though individually we are given the full measure of liking and respect that any of us could feel we deserve, collectively we are a thoroughly distrusted class—distrusted as hardly any other reputable group of educated men is. Perhaps that statement is a little difficult to support by definite evidence, though I am afraid that all of us are conscious that it is so. As a straw to indicate the direction of the wind, I would instance the great selling value of the slogan under which Dr. Cronin's book "The Citadel" was advertised: "A sensational attack on the doctors." Actually this book contained nothing new. As a picture of the profession at work, it does not compare with that other book published at about the same time, "Dr. Bradley Remembers". As an indictment of our profession it is far outclassed by that preface of Bernard Shaw's published many years earlier. But by reason of its advertised claims to unveil the guilty secrets of "the doctors", it has had an enormous sale among the public. It is a sad fact, to which most of us can bear witness, that in pointed jest and joke, in cartoons and in the more or less serious statements made by public men, there is ample evidence that we do not, as a profession, enjoy the trust and confidence which the same public most generously accord us as individual doctors.

Although much might be said about the value of the financial urge in making and keeping doctors "up to the mark" and efficient, I think you will find very few of the more contemplative and more honest-minded members of our profession who do not look at the financial aspects of their practices with some regret. It is only too frequent for our poorer patients to tell us that they have been ill for some time, but have not come to us because they have no money, or because our last bill to them was still unpaid. We all know, on the other hand, the irritating feeling of being imposed upon which we feel when patients calmly ignore the financial bond between themselves and us, and demand our services freely with no attempt on their part to honour their own side of the arrangement. That feeling would be far better absent from our work. I know the irritation that arises at times when some lodge patients insist on our attention as we know they would never do were there a financial consideration for each visit; but on the other hand, it is true that the majority of our lodge patients are as considerate of our time and fatigue as any of our paying patients could ever be. On the whole, I believe that most of us would agree, if questioned, that the lodges are a benefit, in that they enable us to visit sick people as often as we think necessary for their good, without the unhappy feeling that the patient is reckoning up the mounting total of ten-and-sixpences with some apprehension. I cannot see how either the medical profession or the public can be blind to the fact, in theory at any rate, and in some degree at least, that the patient's illness being our opportunity for gain must inevitably put us in direct conflict with the public. Probably one of the reasons for their individual respect for us is that they find that we do not exploit our theoretical opportunities as much as they would expect us to do. None the less, it is unfortunately true that some of our number are unable to resist the temptation to make financial hay while the sun of sickness shines; and the actions of such men are so much in line with the general business ethics and standards of these days, that the general members of the community are loath to believe that such behaviour is as rare among us as it is. Hence again their lack of mass respect.

Sufficient has now been said, I think, to enable me to make this assertion concerning the financial relationship between doctor and patient—that it is theoretically certain to cause conflict, and in actual practice frequently does so, and that we would be capable of doing better work without it. The other aspects of our relationship with our patients are less material and more abstract. In general, it is the sum of these other sides of the question that gains for us individually the respect of the public which the financial side prevents them from giving us collectively. As technical experts on whom they can call for the repair of injured or diseased bodies, they rely on us; as the supposed possessors of knowledge and science beyond their reach, they repect us; as priests of a strange cult of deep mysteries, they revere us; and as personal confidants, thank

Heaven, they really appreciate us. It is this mixture of reliance, respect, reverence and appreciation on the patients' part, and a tradition of self-sacrifice on the doctor's part—often, I am afraid, heavily over-sentimentalized—which is generally held to represent the true relationship between doctor and patient in the present scheme of medical services, which is regarded by us as being so valuable, and which is in danger of being lost with the passing of the old-style general practitioner into a national medical service. If it could be shown that there was in it something of sufficient value to outweigh the obvious disadvantages of the financial side of the relationship, the argument against the reorganization of the medical services would have more weight than I personally believe it has. I doubt if that can be shown. I think the basis of this bond, and the relative values of its various components, need to be scrutinized a good deal more closely before it can be so readily assumed that something of real value is actually endangered.

The component, reliance on us as experts, is undoubtedly a valuable sentiment for the community to hold, and the more we can justify that reliance the better we shall be performing our part in the social scheme. It would be the more so if we could persuade the public to be a little more discriminating in their demands on us as experts. If they would insist on getting from us as experts an accurate diagnosis of the condition needing treatment, and the application of the method of treatment best suited (so far as our knowledge goes) to that condition, then they would require from us less of the bedside manner and the jovial air of good-fellowship, or the strong, silent appearance of profundity, or any of the superficial tricks of appearance which are at present necessary in a doctor if he is to succeed in his profession. I do not mean for a moment that such appearances are deliberately assumed by doctors generally, or even by many doctors individually. Most often they arise from a man's ordinary desire to show sympathy and kindliness towards people in trouble, grafted on to his purely natural manner. But I do know the converse instance, and I am afraid very few of us do not, of men thoroughly qualified to be of the greatest possible assistance to sick people in many lines of work, who are unable to succeed because of some quirk of character or some trick of mannerism which happens to displease the patients. The latter then exercise their much cherished free choice of doctor by turning away from the highly trained men towards some less highly trained or less honest man whose manner is more *en rapport* with what they desire. I agree heartily that this particular aspect of our relationship with our patients, that of reliance on us as experts, is of real value, and must be retained and fostered. But I do not for a moment think that it is in any danger of being lost or lessened in importance by the abolition of private practice carried on for personal gain.

Because I do not think that patients collectively are sufficiently discriminating in their demands on our pure skill, I believe that one must look for the real strength of the tie between doctor and patient in other directions. The other ingredients—reverence for mystery, respect for supposed scientific attainments and confidence in personal integrity—probably flavour the mixture considerably more strongly than does any thought of the doctor's technical ability, or rather, perhaps I should say, than any informed idea of the doctor's technical ability. The amazing growth of the out-patient departments in city hospitals shows that when the patient wants technical ability he prefers to disregard the personal bond, which is supposed to be so strong, between him and his family doctor, and seeks the aid, impersonal but of great prestige, of a hospital in which the name of the doctor who attends him, even if known, is of secondary importance. Respect for our supposed scientific knowledge, however, may be dismissed briefly. It plays a very small part in the building up of the relationship between us and our patients. In the public's estimation it applies to us all as a class, rather than to any of us individually. In some instances, indeed, it is inclined to reverse the relationship, and by making our people regard us as too theoretical, it is often a cause of their turning away from us to people who are less orthodox and more spectacular, and whose claim on the public's credulity depends on their own personality. The conception in the public mind of what our scientific attainments really are, is (perhaps fortunately for us) delightfully vague. I recollect a gentleman in a hotel lounge, who, being immensely impressed by an article in a daily paper about a duck that had unexpectedly turned into a drake, brought the paper to me with the request: "What do you think of that, doctor? Would it be possible?" I am afraid I could only murmur that if the bird laid eggs it was most likely a duck, and if it developed a curl in its tail it might have the right to a drake's status, and hide my head in some shame. Actually, this belief in our scientific powers is a little compliment to our training as a profession, which I should be glad to feel we deserved. But I cannot place it as an important factor in the bond linking a doctor with his patients.

The next factor in order for discussion is the strong and vital force in this chain of components, that of reverence for us as priests of the holy mysteries. I am afraid we cannot in any way take it to ourselves as a compliment. I do not know, I cannot attempt to guess, in what future century or millennium the element of superstition will be purged out of the ordinary man's conception of his body and its ailments. It is only in my own lifetime, in fact during my student days, that one used to meet in the districts of London where we did our maternity work the old "Gamp" whose remedy for difficult labour was to slit up the belly of a black cat and lay the said cat on the abdomen of her patient. Electric belts are still worn, though they are not, I understand, so fashionable now as they were in my younger days. Potatoes are still carried in the pocket or worn stuffed into the stocking-top as a protection against rheumatism. In the last epidemic of poliomyelitis in 1938 the supply of camphor and sulphur in my district nearly ran dry; the camphor was hung round the children's necks in little bags and the sulphur was sprinkled in their boots. And before we rock with laughter at the foolish superstitions of these poor people, let us chasten ourselves and our own pride by pausing a moment to reflect that we could offer them no remedies for these perils and troubles more efficacious than those that they chose for themselves. Let any man in our profession sit himself down in humility and ask himself if he knows in any way what is the effect on the disease, or on the patient, of any one of the drugs he prescribes for the treatment of the common diseases of every day. What, for instance, does any component of any cough mixture actually effect in the patient's body, or more particularly on his lungs and bronchi? What does potassium iodide, sodium salicylate or guaiacum do in cases of chronic rheumatism? Yet in hope or in despair we still have to prescribe these old drugs for our rheumatic patients. How many of us have any idea of how that potent drug ichthyol, with which till recently we religiously plastered the areas affected with erysipelas, discommoded the streptococci which caused it? We may at least thank Heaven that we no longer have to rely upon ichthyol. And we might also quietly pray that soon we shall no longer have to order the ineffective medicines with which we have to bolster the patients' ideas as to our omnipotence. I know that we more than any men are honest in our search for better weapons. And I know too that we are progressing slowly towards obtaining them. But we still possess far too few of them, and I am afraid that we are not, indeed we must not be, honest enough to tell our public that we have not the vaguest idea of how these remedies work, but that we know no better ones. We have to maintain our position of omniscience, our attitude of priesthood and the atmosphere of superstition around us, if we are to be allowed to guide our patients' feet along even the simplest paths of common sense and hygiene. They would reject us for worse counsellors if we did not. But that is not to say that there is anything of value in this line of superstitious reverence, nor that it has any real force in binding any patient to any doctor. It is indeed now so widely diffused among the members of the public as regards our whole profession

that they will flit from doctor to doctor, ever chasing new marvels and miracles. The position of family doctor in the old sense has sadly deteriorated, even during my own working lifetime, and patients nowadays in many cases like to change their doctors as they do their grocers. This superstitious reverence is too, and has long been, equally diffused to include others outside our ranks, and in fact to put a glamour round anyone who makes even the most unsupported claims to knowledge of the medical mysteries. I can well remember in the days of the 1920's, that decade when the ultimate power and wisdom in sickness was widely supposed to reside solely in the brains of the Chinese, that an old Chinese in my town, who had for years been happily content to make a humble living doing a little laundry work and selling a few fowls and fireworks, suddenly awoke to the possibilities of his nationality. He put a glass plate in his window bearing the magic words "Chinese Herbalist". The response was immediate, and to the astonishment of myself and my colleagues, we found that women were even consulting him on those matters about which they are popularly supposed to be modestly reticent except to their doctors—and this though they had known him for years as "John", and though there had been no possible gap in time during which he could have acquired this higher knowledge. Naturally these fashions in superstitions do not last long, but while they last they are very potent—strong enough to outweigh at times even the financial consideration. Let me here interpose another "Chinese" story, though I doubt if there are any medical men of my own generation who have not a store of them.

One winter night in the same decade I was called out to attend a woman who had been a patient of mine for a number of years, and with whom and her family I had established professional relations of the best possible type. The visit entailed a drive of some six miles out along a bush road, and then I had to leave the motor car and walk a mile and a half up and down gullies in the rain by the light of a hurricane lamp. Arrived at last, I asked the patient, who was lying in bed apparently perfectly comfortable, what was the matter. I was told: "The Chinaman says it is a tumour." Somewhat staggered, I asked her which Chinaman, and she confessed that she had put herself in the hands of one of the many oriental practitioners who in those days visited the town. I suggested that in that case she might more properly have sent for the Chinaman than for me that night, but was naïvely informed that she did not think he would come out in the wet! I swallowed hard, and we discussed matters in a friendly way, and she eventually decided that she would in future prefer me to carry on her treatment rather than my Chinese colleague. Before leaving, I said to her: "Mrs. . . . , I have been your doctor now for a number of years, and I have seen a good deal of yourself and your family in that time." She agreed that that was so. I asked her whether she had ever received a bill from me in all that time, and she said no, that I had always been very good to them. I then put it to her that if I had sent her one, she could not have paid it; and she admitted with proper regret that she never could have done so, which I had felt pretty sure was the case. Finally, I asked her whether she would tell me, as a matter of interest, what arrangement she had made with the Chinese gentleman, and rather shamefacedly she confessed that "we paid him thirty guineas down, and were to pay him the other fifty when the tumour had disappeared". All I could say to console her was that she had probably acquired thirty guineas' worth of common sense from the experience; but I doubt if she agreed with me.

Now if I have been "family doctor" to any people in my practice in the past twenty years it has been to that woman, her husband and children, her brothers, sisters and father and mother. That was not sufficient bond to make her even come to ask my opinion as to the likelihood that the Chinese was speaking the truth in saying that she had a tumour, or that he could cure her of it. And if she had so come, and I had given my opinion, I do not for a moment believe that she would have accepted it.

This digression is purely for the sake of making a graphic illustration of the fact that there can be no real bond between doctor and patient built up on superstition. Such a relationship is founded on falsehood and strengthened in stupidity, and crumbles at a breath of common sense and truth, and the sooner we get away altogether from that factor in private practice, the better for us and for our patients. That, I am afraid, is not a very popular view. Some years ago, when that peculiar American institution the Chatauqua was permeating the Australian countryside, there came with one of the parties as the principal speaker a tall American gentleman, with a commanding presence and a luxurious black beard, who (on the programme at all events) carried the degree of doctor of science after his name. The title of his address was "Pills and Personality". Its theme was that the correct apportionment of medical values allotted 95% to personality and 5% to pills; and its climax came when in ringing tones he cried to his hypnotized audience: "Do you rave about your doctor? Do you dream about him? If you don't, change him. He's no good!" No, I am afraid I can see no good in this regard of us as a priesthood skilled in the holy mysteries. If the changing of our form of medical service were the only means of getting rid of it, even though it would produce no other good result than getting rid of it, I should still regard that one effect as being good and sufficient reason for the change.

Finally, let me speak of the last link in the chain that binds the private general practitioner to his patients, which makes them choose him for their confidant—their trust in his integrity and affection for his personality. That is indeed a very different matter. It is a tribute to our standards generally that even young doctors have often not long to wait in their practices before they find themselves being trusted with the most sacred confidences from men and women, both young and old. Most usually, however, this confidence comes in the second half of our life's work, when they have known us for long, and have had us at their side through the strongly emotional times of births, illnesses and deaths. It is to some extent a personal matter, partly a tribute to ourselves rather than to our profession, and therefore we experience it in varying degrees. Some, well worthy of it, get but little of it; some, through some twist of manner, never achieve it; some get it though quite unworthy of it. But none the less, it is our professional standing which makes people come to us to give it; and it is the close relationship with them which we establish in their illnesses, which entitles us to receive it. It is the real, though intangible, reward of our life work. Often it forms apparently only a very small part of our professional life. At times it seems infinitesimal among the hosts of petty annoyances and irritations of our daily job. But it should make a good doctor a little proud and a little humble. And I trust that this factor in our professional relationship will not be swept away in any change of professional organization. I see no reason why it should be.

Now, as to our own side of the relationship: I said that we may and do regard our patients as sources of income, as "cases" to be treated, as fools to be taught, or as friends to be helped. There is much less to be said about our side of the question to a medical audience, because we all know our feelings towards and our reactions towards our patients, and we are all aware that they do at times range through all these phases. Here, again, the profit motive stands a little apart from the others, separating us from the public rather than uniting us with them as the others do. For a man who looks on his patients solely or even primarily as a source of income, there is nothing to be said in a professional sense. He would be much more honestly employed in selling shares or commodities, in which occupation profit is the acknowledged aim. No man can help being gratified at an increase in his income; but fortunately, for most of us, our professional training, with its complete absence of any stress on the financial side, does enable us to dissociate our thoughts of income from the actual personality of the patients whom we are treating and the work we are doing. Any surgeon who can regard an appendix, while he is removing it, as so many guineas going into his pocket, instead of as so much peril coming out of the patient's abdomen, is in danger of prostituting his calling to the extent of taking the further step—that of advising the operation for his own personal benefit rather than for that of the patient. And when any surgeon reaches that

stage, all his fingers should be quietly amputated. A physician who goes through his daily round with his stethoscope on the patient's chest and his mind on the patient's pocket, will not be long before he reaches the stage of advising (as I have known to be done) a course of a certain proprietary remedy for infections and histidine for the cure of an acknowledged and far advanced carcinoma of the stomach, at the modest price of sixty guineas for the course.

On our own side, as on the patient's, the financial aspect of the professional relationship is a danger. Most of us rise superior to it; but the stress is always there. And in these days, in this world, where the economic aim is so blatantly accepted as superior to every spiritual aspiration, the only wonder is that more of us than actually do so, do not succumb to the continual pressure. Of the other three ingredients of the professional pudding, all are legitimately present. If they are correctly mixed, the resulting relationship will be harmonious and good. If a man regards each patient as a "case" to be treated; but refrains from regarding him only as a "case"; if he regards his patients in mass as fools to be taught the common sense of healthy living, yet sees behind their apparent foolishness to the basic causes of their lack of knowledge, and goes out in humility to teach them from his own little knowledge, as one fool to another; if he looks on them as friends to be helped, yet does not allow his sympathy to blunt his judgement—then his patients may justly call themselves fortunate. Few of us, I am afraid, achieve that perfect balance, though I like to think that most of us aim at it.

So, having dissected a little the meanings behind the trite phrase "the present relationship between the doctor and his patients", I think—or at any rate I hope—it is clear that the relationship is made up of various components, some of which could very well be cast out from our consideration, while others do contain something of real value which must be carefully preserved in any new system evolved. From whatever aspect it is viewed, the doctor's or the patient's, the financial aspect should be abolished. It is a hindrance which bars us, and a snare which entices us away from good work. Its loss would be gain to both the profession and the public, if any other reasonable basis of remuneration can be devised. Once that is out of the way, reliance on skill and knowledge can more easily take its place as the prime mover in the medical machine. Any system that will give the doctor freedom to use all possible means of scientific diagnosis and to make use of the best he knows of honest methods of treatment, will enable him to discard finally the empirical, if harmless, dishonesties with which he has at present to associate himself. It will make possible the education of the patient and the preaching down of the superstitions, without our profession's thereby being open to the accusation, false but often made, that financial jealousy and fear of losing our livelihoods to the charlatans is our motive. It will, if we preserve our pride in good work in the new service as in the old, raise our professional status and give it dignity. Pride in our skill will bind us to our patients far better than financial competition ever would, and there will be at any rate a better chance that a just reliance on our ability as technical experts may occupy at least part of that place in the patient's mind which is at present filled with superstitious awe and credulous belief in everything purporting to be magical in relation to the body and its disorders.

I do not think it is unfair to draw the conclusion from what I have so far said, that of the various links in the chain which binds us and our public together in professional relationship the financial one and that of superstitious reverence would both be far better broken. Those two out of the way, the new national service would have lost nothing worth retaining. And if, as seems reasonable, public reliance on our technical ability may well be expected to be even strengthened, the balance so far would be of absolute gain, from the point of view of doctor, patient or the State. There still remains, however, the fourth aspect in this matter, the little gem in the dust heap—that personal confidence in us on the patient's part, linked with the sympathetic knowledge of the patient's personality and its disabilities on ours. This trust is not given by all patients, nor perhaps even by the majority of them. It is not received by all doctors, though it is, I think, by the majority of them. None the less, it is of value, and place must be made for its retention in whatever form of national service is devised to replace the present creaking and faulty system. There is a definite danger of its being lost. The essentials necessary for its retention are the maintenance of a high type of men in the personnel of the new service, and the fostering throughout of the old professional spirit, from the top to the youngest recruit in it. The professional spirit may be defined as that which places the quality of the work done as the first consideration, and the nature of the remuneration only second; fortunately it is a spirit very widely spread and not by any means confined to our own profession. Historical examples, indeed, show that it can survive and even thrive in the most adverse of bureaucratic conditions. The history of the British Colonial and Indian Civil Services is full of it on every page. But it can undoubtedly be greatly hampered and discouraged by bureaucracy, for which reason it is necessary to urge so repeatedly and persistently that the members of the medical profession should themselves wrest the devising and control of the new service from the hands of politicians skilled only in bureaucracy. The new order I have proposed is based largely on team practice in hospitals, clinics and groups. There is undoubtedly a tendency for clinics to become impersonal and soulless, and to lose all pretence at that close personal contact with the patients which should lead to mutual trust and affection. I understand, though I have no personal knowledge of the matter, that the larger American clinics have already developed in this direction of impersonality. That efficient work, better work than that of which private practitioners are capable, is possible without this close personal touch, and that the members of the public are inclined to value and appreciate that work, perhaps even more highly than they value the old style of private practice, is shown by the continued success of those clinics, by the steady growth of the out-patient departments in city hospitals, and by the corresponding decline in private practice in the larger cities. None the less, I believe this contact is valuable, as it certainly is pleasant, on both sides of the relationship. And I see no reason why it should be impracticable or even diminished in a clinic system of State medicine. All that is needed is to ensure long tenure of position in the one locality to a doctor who has reached the status of group member and to promote him (so far as is possible) within his own group or area, moving him to other districts only for exceptional promotion or on evidence of lack of sympathy between him and the practice he serves. In that way the main essentials of value in present practice would be retained, and could even be brought to greater value than they are now, the other hindering factors being removed. The gem of value should be more appropriately set.

To sum up my argument: the cry that we are in danger of losing the ties of personal relationship between the general practitioner and his patients by the institution of a national medical service, has no meaning until the essentials of that relationship are analysed. When this is done, it will be seen that a large proportion of them are unworthy of retention, but hamper efficiency and harmonious working. In a well devised national service the elimination of the unworthy factors will permit the enhancement in value of those remaining. And, finally, the achievement of maximum efficiency need in no way bring about the loss of anything of real value in our present system.

Therefore let me urge my professional colleagues to put aside fears of the unknown, to discard the bonds of their imagined security in the present, and to plan for the future a medical service in which they will be proud for their sons to live their lives and make their reputations.

LUNG BLAST.[1]

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PULMONARY concussion or "lung blast" is a hæmorrhagic lesion of the lungs, which is unaccompanied by any significant injury to the chest wall, and is due to the effects of the detonation of high explosives.

This paper is based upon observations made on patients admitted to hospital under my care in the East End of London during the September "blitz."

Pathology of Lung Blast.

The chief characteristic of this condition, differentiating it from other closed pulmonary injuries, is a severe lesion of the lungs without any apparent injury to the chest wall, except perhaps some hæmorrhage between the parietal pleura and the thoracic wall. There are no subcutaneous bruising, no fracture of the ribs and no blood in the pleural cavity.

The lungs themselves are affected by irregular areas of hæmorrhage, which are most pronounced beneath the visceral pleura and may roughly follow the indentation of the ribs. The amount of lung tissue involved varies firstly according to the force of the detonating wave, secondly according to any protection the lungs may have from the position of the subject, and thirdly according to the period of survival after exposure to the detonation.

If post-mortem examinations are performed on persons who die immediately or soon after exposure to bomb detonation, it is found that the lungs are affected by bright red areas of recent hæmorrhagic consolidation. These areas are solid and elastic to the touch, and they are completely airless. They are most pronounced beneath the visceral pleura, and are of variable extent. In addition, the trachea and bronchi may be affected by submucous hæmorrhages visible to the naked eye.

Microscopic examination of the affected areas reveals intense capillary dilatation, and the alveoli are distended and packed with red blood cells, which are non-hæmolysed and stain well, and whose hæmoglobin content is undiminished.

Should the subject live longer, this picture changes, as in the case reported by Hadfield and Christie (*The British Medical Journal*, January 18, 1941), and in one of my own cases. In the former case the patient died fifty-three hours after injury and in the latter sixty hours. Firstly, we observe with the naked eye that these hæmorrhagic areas are considerably larger than in persons who die immediately. Secondly, the character of these areas has changed. They may now be divisible into two zones. There is a central dark red zone, coloured like venous blood and flecked with small grey areas. This zone is surrounded by an outer peripheral zone of bright red colour. Microscopically, the grey flecks, which are very friable, appear to be centres of repair of the damaged lung tissue. In them the alveoli are filled with meshes of fibrin containing hæmolysed red cells and many wandering monocytic blue cells. The dark red central zones are solid and wooden to the touch. Here and there are dilated alveoli with unbroken walls. These alveoli are filled with red cells of poor staining quality, many of them being hæmolysed. In the peripheral bright red zones all alveoli are packed with fresh, well staining non-hæmolysed red blood cells.

The explanation of these zones is that the central zone is the original lesion. Scattered through it are areas of early repair. Around its periphery is an area of later bleeding, the extent of which is dependent on the length of time the subject lives.

Thus in persons living after the injury there is an attempt at repair of the areas of hæmorrhage, and at the same time some more bleeding occurs peripherally. When the patients recover, the clinical signs reveal that these areas will become completely normal, as is shown by the quality of the percussion note and breath sounds and by the radiological findings.

Ætiology.

There have been various theories as to the cause of lung blast. When a bomb explodes there is immediately set up a concussion wave of intensity varying with the size of the bomb and with the type of structure on which it falls. This is closely followed by a suction wave, as is well shown after a town has been bombed, when all the glass of the shattered windows is found in the streets in which the bombs have fallen, rather than in the houses themselves. Many investigators had previously thought that lung blast was due to the concussion wave's bringing about a sudden rise in the pressure of the air-conducting mechanism of the lungs, hence causing disruption of the alveoli and injury to the capillaries.

Other observers thought that the same injury was caused by the suction wave's sucking air out of the lung, so lowering the intrapulmonary pressure, with consequent collapse and rupture of the alveoli.

Zuckermann has shown by animal experiment that the lesions in the lungs are due to the sudden and violent impact of the blast wave on the chest wall itself. The elastic chest wall is driven in onto the lungs, and this impaction is the cause of the hæmorrhages.

These experimental observations are supported by post-mortem evidence in the human. Firstly, most of the lesions and the more severe ones are found beneath the pleural surface. This was well shown in a subject on whom I performed an autopsy. Further, in this case, these hæmorrhagic areas roughly conformed in shape to the overlying ribs, showing that these had caused more injury to the lung than had the softer intercostal tissues. Naturally, the more severe the detonation wave, the deeper these lesions will pass into the substance of the lung.

A further fact against the original theories of the causation of lung blast is that microscopic examination of the affected areas reveals no disruption of the alveoli; rather does it show these to be filled with red blood cells and even fibrin. The structure of the alveolar walls is preserved, and there is no evidence of the air's travelling through the lung, as would be allowed by alveolar rupture. The hæmorrhage appears to arise from the rupture of the grossly dilated capillary vessels.

Clinical Picture.

The clinical picture varies with the extent of the lesions, which in their turn vary with several factors—as, for instance, the size of the exploding bomb, and the protection afforded to the casualty by buildings or other objects, or by his position in relation to the blast wave. To exemplify this, a person facing an exploding bomb may have both lungs affected anteriorly, whereas one standing with his back to a bomb explosion will have both lungs affected posteriorly, and, again, one with his side to the blast will have one lung affected.

I have divided the cases of lung blast, with which it was my privilege to deal, into three main types.

1. The first type comprises those patients found dead immediately after an explosion. Outwardly there appears to be no bodily injury. A post-mortem examination will show that all systems are normal, with the exception of the lungs. There are numerous single-zoned hæmorrhagic areas throughout the pulmonary field, but these may not seem in any way serious enough to cause death, which is as yet unexplained. It may be due to impulses from the damaged lungs themselves or to such a condition as *commotio cerebri*.

2. The second type is illustrated by the following case report.

[1] A post-graduate lecture, delivered on May 8, 1941, at Sydney.

A bomb fell through a two-storied house and exploded in the cellar, in which were sheltering a husband and wife. The wife was aged forty-five years, and was of obese build. On her admission to hospital she was suffering from shock and had a ragged through-and-through wound of the left breast, with no apparent injuries of the lungs and chest wall. Two hours later *débridement* of the wound was carried out and it was packed with "Vaseline" gauze; nitrous oxide and oxygen anæsthetic was used.

Twenty-four hours later the patient had a severe pain on the right side of the chest, worse on inspiration. The temperature rose to 102° F. There were no abnormal physical findings in the chest, but her general condition was poor. She also had a slight non-productive cough.

Forty-eight hours after the bomb fell, some fine crepitations were heard at the base of the right lung posteriorly. The breath sounds were vesicular in character and the percussion note was resonant. A radiograph could not be taken, as the patient was too ill to be moved. A leucocyte count revealed 8,400 white cells per cubic millimetre, 80% being neutrophile cells.

Sixty hours after receiving the injury the patient suddenly collapsed and died. The temperature before death was 100° F. and the pulse rate 120 per minute; the respiratory rate was 30 per minute.

Post-mortem examination showed that all systems were normal, except the lungs, which were affected by the zoned hæmorrhagic areas previously described. These occurred in the lower lobe of the left lung and in the upper and middle lobes of the right lung. There was complete hæmorrhagic consolidation of the lower lobe of the right lung.

This type of lung blast, therefore, is one in which the lungs are grossly affected. It is characteristic of cases of lung blast that the signs usually do not reveal themselves for some time after the injury has been sustained. The patient's general condition never seems satisfactory from the start, although one can lay no hand on the cause. However, if there are no other extraneous lesions, one should suspect lung blast and confirm it by radiology, as will be discussed later. That is to say, many people who we think are suffering from shock are in reality the victims of pulmonary concussion.

These patients live for some hours or days and the chest signs may bear no relation to the severity or the outcome of the lesion. Throughout the illness, there may be only a few crepitations in the chest to draw attention to the condition of the lungs. Greater dependence must be placed on the general condition of the patient. Cyanosis or breathlessness will be present, but these signs are not constant. In the above case, for instance, practically the whole of both lungs was affected; but there was no cyanosis and little breathlessness.

3. The third type is the less severe case, in which recovery usually occurs. This is well illustrated by the history of the above patient's husband.

The husband, aged forty-seven years, was pale and suffering from shock on his admission to hospital; he had a large lacerated wound of the left loin. His chest and lungs were clinically normal.

After he had recovered from the shock, a nitrous oxide and oxygen anæsthetic was administered and *débridement* of the wound was performed.

Twenty-four hours after the explosion a dry cough developed and the temperature rose to 102° F. The respiration rate was 26 per minute and the pulse rate 110 per minute. Examination of the lungs revealed some fine crepitations at the base of the right lung posteriorly. The breath sounds were vesicular in character and the percussion note was resonant. The patient's general condition was good and he suffered no pleural pain.

Next day, forty-eight hours after the bombing, his clinical condition remained the same. A radiograph revealed congestion at the bases of both lungs, with a patch of consolidation at the base of the right lung. There were no fractured ribs and there was no fluid or air in the pleural cavities. A blood count was interesting; the leucocytes numbered 19,600 per cubic millimetre, of which 85% were neutrophile cells.

Seventy-two hours after the injury there was a patch of tubular breath sounds with some coarse crepitations at the right lung base. The percussion note was now dull. His general condition was good, the temperature being 99° F., the pulse rate 80 per minute and the respiration rate 25 per minute.

One hundred and twenty hours, or five days, after the injury, the breath sounds at the base of the right lung had become vesicular in character. Numerous coarse crepitations were still present. The percussion note was again resonant.

Two days later the chest was normal, both clinically and radiologically. Throughout this patient's illness there was no sputum, hæmoptysis or chest pain.

Therefore, in this type of case there is firstly a period during which no injury of the lungs is suspected. The patient's general condition is good, and gives no cause for concern, unless of course other serious lesions are present elsewhere. In most instances, the first suspicion of any lung blast may merely be a dry cough accompanied by a rise in temperature and possibly some pain in the chest. Hæmoptysis may occur, but this is not very common.

The microscopic finding that the affected alveoli are packed with red cells would lead one to think that hæmoptysis would be a frequent symptom. It is probable that the musculature of the bronchioles leading to the alveoli is in a state of contraction, so cutting them off from the rest of the bronchial system and preventing hæmoptysis.

The rise in temperature is not due to infection, as post-mortem examinations reveal that the areas are completely free from infection. It is due to the trauma and the resolution of the extravasated blood.

As the disease progresses, the temperature and pulse rate rise, to fall slowly as the patient's condition improves. There is also a rise in the respiratory rate, and in the more severe cases a persistently high pulse rate is present. There is nothing characteristic about the temperature charts on which a diagnosis could be based.

The extent of any rise in respiratory rate and the onset of cyanosis will depend on the area of the pulmonary field affected. One patient may have a slightly raised respiratory rate and be of a good colour, whereas another may have a respiratory rate up to 35 per minute and be deeply cyanosed. In these less severe cases the physical signs in the chest are, firstly, areas of crepitations, with normal breath sounds. These areas do not necessarily indicate the extent of the damage to the lung. In twenty-four to forty-eight hours these are replaced by areas of tubular breath sounds and impaired percussion note, the findings varying according to the change in the hæmorrhagic areas. These signs may clear up in the next four days or last longer. As the chest returns to normal, so do the temperature, respiratory rate and pulse rate. The general condition of these patients never gives rise to anxiety.

The course of this illness is thus fairly short, usually about one week if no complications arise.

It is difficult to say what percentage of cases should be allotted to each of the above categories; this is because many people found dead after air-raids were not subjected to post-mortem examinations. There was neither the time nor the staff to perform them. Civil authorities were also empowered to give certificates of death, stating baldly that the cause of death was due to enemy action, and not specifying the injuries. Again, in many patients the lung blast is but a minor part of the patient's injuries and may be missed.

Diagnosis.

This condition may be difficult to diagnose from other closed injuries of the lung, especially if the patient suffers from the direct blast of the bomb and is then buried under a pile of débris, which may cause a crushing injury of the lungs. In a typical case there are no injury to the chest wall and no bruising or fractured ribs, and the clinical onset of the illness is delayed some time after the explosion.

At times these patients have been thought to be suffering from pneumonia, but this can be easily differentiated by a careful study of the case. The patient has not the flushed appearance of a person suffering from pneumonia. Usually breathlessness is not present, and the history of exposure to bomb blast should lead one to the correct diagnosis.

Radiology can be of great assistance. A radiograph will reveal mottled woolly shadows corresponding in extent to the hæmorrhagic areas, and where these coalesce it may

reveal consolidation of a whole lobe. Follow-up X-ray examinations will reveal increase in size or disappearance of these shadows, according to the progress of the patient.

A Utopian ideal would be to make X-ray examinations of the chests of all persons exposed to a bomb detonation as soon as possible after the injury was sustained, thus revealing the presence of lung blast before the physical signs appeared. The X-ray examination helps also in the diagnosis by eliminating such factors as fractured ribs, pneumothorax and hæmothorax.

A blood count may reveal a neutrophile leucocytosis; but it is difficult to say in any individual case whether this is due to the pulmonary lesion or to the wounds present elsewhere in the body. The main aid in the diagnosis is always to suspect lung blast.

Treatment.

With regard to treatment, I shall first discuss the prophylaxis of the condition, and it is simply this: as far as possible, one should keep out of the way of bombs. This may sound self-evident; but one is surprised at the number of people who will remain in the open to watch an air raid. This was so in London at the commencement of raids; but the public soon became wise and took to the shelters, which at least protected them from blast.

Secondly, all people rescued from the vicinity of an exploding bomb must be suspected of having lung blast, which may not reveal itself for some hours, and the lungs must be respected accordingly. This introduces the question of bed accommodation. Usually there is no doubt that people who have been near an exploding bomb need treatment, as they are suffering severely from shock, even if they have no apparent injury. This shock may disappear in a few hours; but they should still be kept in hospital for twenty-four hours to obviate their discharge in a condition of as yet unrevealed lung blast.

Thirdly, an anæsthetic may need to be administered for wounds requiring surgical treatment. Now, if the lungs are in a state of lung blast, though yet unrevealed, an irritant anæsthetic such as ether may accentuate this damage. A gaseous anæsthetic like nitrous oxide may further dilate the capillaries and increase the hæmorrhage, especially if any anoxæmia is present, so that a plea for the increased use of intravenously administered anæsthetics may be put forward. I used "Pentothal sodium" in several cases, although they were only a few. I could not follow up the patients for long, but in every post-operative case the result was better than after an inhalation anæsthetic.

Fourthly, too much intravenous medication (for example, saline solution) may be dangerous, as it can produce a water-logged condition of the lungs, so further embarrassing respiratory efficiency.

For the revealed condition of lung blast the treatment is mostly symptomatic and not unlike that of pneumonia—the administration of morphine and heat for pain, of expectorant mixtures for cough, of oxygen for cyanosis, and the usual general nursing care. Sulphapyridine may be useful in preventing infection of the damaged areas. It has been suggested that hypertonic saline solution may help decrease the spread of the hæmorrhage, but of this I have no experience.

There is one further practical point in the treatment, and that is that these patients tolerate transportation badly; unless it is absolutely necessary, therefore, they should not be moved from one hospital to another.

Prognosis.

The immediate prognosis of lung blast depends on the category in which the patient falls. He may be found dead near the site of the explosion. He may die a few hours or days after the explosion. Death a few days after the explosion, whilst dependent mostly on the extent of the damage and the force of the blast, is especially apt to occur if the condition is originally unsuspected and the patient is not confined to bed.

Prolonged transportation also unfavourably influences the prognosis.

With regard to those patients who live, their lungs may completely recover, as is shown by follow-up clinical and radiological examinations. The major complication to be feared is the infection of the damaged lung areas, leading to pneumonia, lung abscess or even gangrene of the lung, and the prognosis then becomes that of these conditions.

It must, of course, be remembered that there may be other multiple injuries and that lung blast may be but one of many lesions; the prognosis will probably depend on conditions other than the lung blast. Other thoracic organs, such as the heart, may be affected, and this fact will also influence the prognosis.

Reviews.

A HAND-BOOK OF SURGERY.

H. S. SOUTTAR's work "The Art of Surgery" has been published in two volumes in the fourth edition.[1] According to the subtitle the work is "a text book for students and practitioners". In the preface to the first edition the author stated that the practice of surgery rests upon a mass of knowledge, the accumulated experience of generations, which is apt to overwhelm the student by its mere bulk and to obscure his vision of the whole in a mist of detail. The author's object has therefore been to lighten the student's burden by omitting what is not essential and by describing very fully what is fundamental. In the preface to the fourth edition he states that the student will find in the book all that he requires for most examinations in surgery. The statement in the first preface makes it difficult to determine the scope of the book; the statement in the last simplifies the matter, for there are certain details which the student should have at his fingers' tips when he faces an examiner. It may be stated at once that in our opinion the author only partly attains his objects. The book will serve as a useful medium of instruction for students beginning the study of surgery, but it is not sufficiently detailed to serve as a hand-book for practitioners, that is, for general practitioners in Australia. Even for students it will need to be supplemented by other works.

The author writes in an attractive way and illustrates his remarks with useful line drawings. He gives a bird's eye view of the subject, and this is no doubt what he intends to do. The subjects covered are very wide. Gynæcology is excluded; there is no chapter on the surgery of the female organs of reproduction. In a book bearing such an ambitious title as these volumes do, this is strange. The omission should have been explained by the author. There is a slight and sketchy chapter on the nose, throat and ear; but none on the eye. Presumably ophthalmic conditions do not obtrude themselves sufficiently in the work of a general surgeon. There is a section on diphtheria. To justify the view that this work will not give the student all that he requires when he is called upon to face examinations, several points may be mentioned. In the section headed "Acute Intussusception in Infants" we read: "The only treatment of acute intussusception is immediate laparotomy, preferably under spinal anæsthesia." This view will not be accepted in Australia, where reduction by hydrostatic pressure has been particularly successful, and students should at least be taught that this method can be used and is used with success, even if their own teachers do not use it. In the treatment of fracture of the neck of the femur the use of a Thomas splint and the subsequent application of a walking caliper are the only methods mentioned. The student should at least know that the Smith-Petersen nail is effective in some of these cases and that it gives a useful limb to many who would otherwise be cripples for life. Gunshot wounds are discussed in twenty-five lines, and the information given on wounds generally is skimpy. Tetanus toxoid is not mentioned in the prophylaxis of tetanus, but only antitoxin. We have nothing but approval for the emphasis laid on local, regional and spinal anæsthesia in the chapter dealing with anæsthesia. Appropriately too there is a short chapter on radium. This work is a good introductory hand-book and nothing more.

[1] "The Art of Surgery: A Text-Book for Students and Practitioners", by H. S. Souttar, D.M., M.Ch., F.R.C.S.; Fourth Edition, in two volumes; 1940. London: William Heinemann (Medical Books) Limited. Demy 8vo, pp. 789, with illustrations. Price: 25s. net.

The Medical Journal of Australia

SATURDAY, JUNE 28, 1941.

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DIAGNOSIS, CONCEIT AND AUTOPSIES.

THAT intelligent treatment is impossible without accurate diagnosis is a true maxim and worthy of all medical practitioners to be remembered. Cure, it must be admitted, often takes place in the absence or in spite of treatment, and for this the resistance of the body to infective agents and its remarkable powers of recovery are responsible. This is not sufficient to condone failure in diagnosis from laziness or ignorance, although patients and their relatives may perhaps be made to believe that watchfulness and knowledge have been displayed. From medical science the nature of certain disease processes is hidden, and in these circumstances diagnosis may become difficult and treatment is symptomatic. Thus we see, as has been pointed out many times, that diagnosis is partly a science and partly an art. As far as it has to do with facts and the principles based on them it is a science; in its reliance on clinical and laboratory methods of investigation and on their application, and also on an insight into the psychological make-up of the individual, it is obviously an art. But art and science in diagnosis are inseparable and it is in this that the fascination of diagnosis lies. The first duty of the clinician is to discover the facts—the detailed history of the onset and progress of the illness, showing the symptoms and signs in their proper sequence, the family history and any factor in the patient's working or leisured life that may have to be considered. These are facts, but they may be so obscured that their discovery becomes an art. The same may be said of the presence of pathogenic micro-organisms in secretions or excretions of the body or of significant structures in specimens of tissue removed for biopsy. If discovery of facts is an art, their interpretation and their weighing in the balance, that their relative significance may be determined, are much more an art.

Diagnoses may be right or wrong, but as a rule some sort of a diagnosis has to be made, for the patient or his relatives nearly always want the attendant to give the illness a name. Incidentally we may note that, generally speaking, the more fearsome the name and the more lurid the details, the more content will these people be, provided the patient recovers: Mrs. 'Arris and Mrs. 'Iggs of the back yard fence are not alone in their fondness for talking of ailments, nor in the pleasure that they derive from so doing. Of course, if the patient does not recover, well, "he could not be expected to get well from such a terrible complaint". In the one case the doctor is given credit for his supposed skill; in the other no blame will attach to him. It all seems very simple, and the question may be asked whether it really matters what diagnosis is given. The answer must come swiftly that it always does. Carelessness or even repeated error in diagnosis must have a bad effect on the clinician's appreciation of the significance of symptoms; he will pass from being slipshod in word to looseness of thought, and in the long run his whole conception of the practice of medicine will suffer, at first imperceptibly, but in the end in such a way as to undermine his professional character. In the practice of a large hospital deterioration is not very likely to occur; too many eyes are on the patient, too many minds are concerned in the problem of his illness. Particularly is this the case in a clinical school, for there is no keener critic than a student, and the teachers, who were once undergraduate students themselves, know it. It is in private practice that most care needs to be taken. We may take it for granted that the great majority of practitioners are reasonably careful in diagnosis and that very few are wilfully misleading. If a practitioner sinks so low that he gives to the patient a false and grave diagnosis to enhance his own reputation when the patient recovers by the aid of Nature and perhaps in spite of his ministrations, he is beyond redemption and would be better out of the profession. But there is another and more subtle danger. Success in practice, in other words the possession of a large practice and the adulation of patients, may make a practitioner conceited. When is added to this the fact that few if any of his diagnoses are ever called in question, he must take care lest he fall. It is then that he runs the danger of uttering the slipshod word and of starting the formation of a bad habit. Every practitioner knows that his diagnoses are not always correct, and every wise practitioner takes all the precautions that he can to make the number of his errors as small as possible. He does this by a repeated stock-taking of his own ability, by having recourse to laboratory aids and the assistance of a pathologist whenever such collaboration seems necessary, and by consultation with a colleague when, after taking all these precautions, he is still in doubt. There remains one final corrective. W. F. Putnam, writing in *The New England Journal of Medicine* of February 20, 1941, describes this well when he writes that the impartial knife of the pathologist is a certain antidote for conceit.

There is surely no need to remind readers that post-mortem examinations enable a clinician to study in retrospect the clinical significance of symptoms and to place them in their proper relationship to one another;

they allow him to judge whether his treatment was appropriate and give him an opportunity of checking his diagnosis. If the clinician were compelled to attend a post-mortem examination into the cause of death of every patient whom he attended, he would certainly become more cautious in diagnosis and would more often be correct in his statements. But to carry out post-mortem examinations as a routine measure in private practice would be difficult. Putnam, however, has managed to do this to a certain extent and for this reason his paper is encouraging. He has performed autopsies in 34 of 64 cases; in 24 instances request for permission to make an examination was refused and in six no request was made. The details of Putnam's paper are not germane to the present discussion; but it may be stated that in several instances, as would be expected, the information obtained at autopsy was a surprise to the clinician. An important point is that, although Putnam describes his practice as a rural one, the autopsies were done "through the courtesy of the Department of Pathology, Dartmouth Medical School". If we agree that post-mortem examinations should be carried out in private practice, the first question that will arise is where the work can be done. Generally there will be a hospital not far away from the centre of the medical practitioner's activities. Putnam suggests that the undertaker's mortuary is a suitable place; in this regard conditions in New England are probably different from those prevailing in Australia. Occasionally limited examinations have been made in the patient's home in this country; but the difficulty of such a procedure can well be imagined. At present the performance of post-mortem examinations in reasonable numbers in private practice in Australia is a counsel of perfection. In any new form of medical service that may evolve, this ideal should be kept in mind. The first move towards such a desirable end must be an increasing appreciation by medical practitioners of such a check on diagnosis. And we may conclude by quoting Putnam:

> The physician who is practising by himself in a more or less isolated community, with no large hospital and few if any colleagues at hand, can more easily and quickly than any other arrive at a point where he feels an unjustifiable degree of self-satisfaction. Most of his diagnoses appear to be correct, or at least nothing occurs to cast serious doubt on them, most of his patients recover following his ministrations, and most of the deaths appear to be inevitable. One who does not take advantage of the opportunities that would be provided by post-mortem examinations on his own cases to recognize and remedy his deficiencies is in danger of ultimately becoming a liability to the community. With unjustified confidence in himself, he is in a position to do a great deal of harm through repetition of unrecognized mistakes.

Current Comment.

NON-SPECIFIC MESENTERIC ADENITIS.

IT is a well-known fact that in a considerable number of cases in which operation is performed for appendicitis, the removed appendix does not present the expected appearance. On macroscopic examination it appears to be normal and even microscopic examination often does not reveal much evidence of an acute or chronic inflammation.

With regard to chronic appendicitis, several suggestions have been proffered to explain the discrepancy between the clinical symptoms and signs and the absence of true inflammatory processes. P. Masson has published a number of papers in which he has drawn attention to the hypertrophy of the neuro-muscular tissue in the submucosa so often found in such cases and his findings may account for the clinical picture to a greater extent than it is generally realized. C. B. Fausset[1] has recently drawn attention to a clinical and pathological entity which was first described in 1936 by Beluffi under the designation "chronic lymphoid appendicitis". It comprises three fundamental types, the hypertrophic-hyperplastic, the sclerotic-atrophic, and the obliterative. These types are considered to be evolutionary stages of the same anatomico-pathological process of which the initial lesion would be lymphatic hypertrophy and hyperplasia, the second an increase of the interstitial connective tissue proceeding to sclerosis and the last the complete occlusion of the organ. Although Fausset's paper does not contain any references to Masson's work, which actually is not widely enough appreciated, it seems likely that both conditions are related to one another. On such lines a solution of the problem of clinical chronic appendicitis without evidence of true chronic inflammation in the appendix might be found. For the cases of "acute appendicitis", however, which do not show a corresponding lesion of the appendix little explanation has been attempted. It is well known that sometimes acute appendicitis may be simulated by cholelithiasis, an acute perforating ulcer of the stomach or even by the rupture of an ovarian follicle which causes irritation of the peritoneum, but in such cases the explanation for the clinical findings is available at operation. The cases in which no such lesion can be found are those for which an explanation is most required.

Reports have been published that in a number of such cases a swelling of the mesenteric lymph glands was noticeable. A. O. Wilensky[2] has collected all these scattered reports and has published a thorough review of general abdominal lymphadenopathies. They are, according to him, similar to lymphadenopathies in other regions. In the abdomen many of them are part of a distinct symptom-complex such as typhoid fever or dysentery. Others are related to loosely gathered clinical entities known collectively as the "rheumatic" group of diseases. Still others are related to various conditions associated with generalized cutaneous manifestations including some of the exanthemata. A large group seems to be related to a preceding "catarrhal" or "throat" infection and this seems to have some relation to forms of glandular fever, infectious mononucleosis and what is clinically known as abdominal influenza. Finally, there is a type in which the lymphadenopathies cannot be clinically connected with any demonstrable preceding or accompanying lesion. Because of this fact the last-mentioned type has been considered still undemarcated and undifferentiated, and is called, for want of a better term, non-specific mesenteric adenitis.

Not always is the causative agent demonstrable. In only a minority of the latter cases have bacteria been found in the glands; but no causal relationship could be established between them and non-specific mesenteric adenitis. The portal of entry for the causative agent for non-specific mesenteric adenitis is only on rare occasions the appendix, and this can happen only when some anatomical abnormality of the lymphatic drainage pathways of the appendix is present. More commonly, the portal of entry seems to be related to catarrhal or throat infections, and least commonly the condition is a manifestation of a hæmatogenous mechanism or (more frequently) of a causative agent swallowed from the oropharynx and passed along to the terminal portion of the ileum, from which local absorption occurs. Most often of all the non-specific mesenteric adenitis is due to absorption from some local non-demonstrable lesion in the ileal segment of the alimentary canal; it can be safely assumed that this includes various forms of transient enteritis and other surface infections, various gross and microscopic injuries and other forms of physical

[1] *Archives of Surgery*, October, 1939.
[2] *Archives of Surgery*, January, 1941.

and chemical traumata. In this more common mechanism there is a marked similarity to the commonly observed phenomena of cervical adenitis. In either case the local injuries and infections permit the passage of the causative agent to the appropriate lymph nodes. The mechanism is based on an exact duplication in the two positions of the anatomical arrangement of the local lymph adenoid tissue in the wall of the alimentary canal and of the corresponding lymph nodes. The heaping up of extraordinary collections of lymphadenoid tissue in the wall of the alimentary canal at both of these locations is remarkable and seems important from an ætiological and a mechanistic point of view.

As in many cases abdominal lymphadenopathy is part and parcel of some larger definite clinical entity, treatment must follow along the lines known by experience to be correct and adequate for the original disease. In the presence of non-specific mesenteric adenitis and in the absence of any suppuration or other complication, none but conservative treatment would be indicated if one could so perfectly diagnose the condition that the fear of undiscovered acute appendicitis or other surgical emergency could be definitely eliminated. Unfortunately, this is not possible in clinical practice at the present time, and abdominal explorations are more or less frequently necessary in order to establish the true nature of the intraabdominal condition.

So much for Wilensky's conclusions. Although he points out that a practical application of this conception is not yet possible, Wilensky has certainly made a very valuable contribution towards the elucidation of those discrepancies which have so often puzzled surgeons and pathologists in cases diagnosed, but not verified, as acute appendicitis.

PAROXYSMAL FLUTTER OF THE DIAPHRAGM.

THERE has recently appeared in *The Journal of the American Medical Association* a description by M. J. Goodman of a complaint as novel as it is interesting, and occurring in a patient whose unusual character lends to the whole story entertainment of a lighter sort.[1] The complaint consists of recurrent attacks of sudden flutter of the respiratory diaphragm, causing extreme distress and severe precordial pain, and in each attack presenting a remarkably close superficial resemblance to coronary occlusion. The patient was an American tramp, described in a high-sounding way as a "peripatetic transient", and one whose character was not out of keeping with his calling. An inveterate liar, he presented to the doctors who cared for him in his wanderings a variety of names and "fantastic life stories which agree only in their incredibility". He could be traced from hospital to hospital throughout the country not by his name but by his complaint. A crotchety isolationist, he generally left hospital as soon as possible after obtaining relief. In deference to Aristotle, it may be added that Goodman, in using the term peripatetic to describe this strange character, seems to give to it only its physical and literal significance.

This is the third time an account of the patient has been published in the American Medical Association's journal. In 1935 W. B. Porter described an attack of sudden precordial pain and collapse, with an area of extreme hyperæsthesia in the precordium and spreading to the inner aspect of the left arm, associated with and apparently caused by a rapid rhythmic fluttering of the diaphragm. Relief was given by infiltrating with "Novocain" first the left and several hours later the right phrenic nerve. In 1936 R. W. Whitehead, C. T. Burnett and J. B. Lagen described essentially identical attacks, in which oxygen and opiates were of little use. "Novocain" infiltration of the left phrenic nerve gave brief relief. A recurrence was treated successfully but temporarily by left phrenicotomy. When the flutter again appeared a few days later the right phrenic nerve was crushed. Even then relief was only temporary, so the left phrenic nerve was avulsed. The patient now introduced some variety into the picture by developing an hysterical hemiplegia. Before long, however, this gave place to a further recurrence of flutter, this time of the right leaf of the diaphragm. Section of the right phrenic nerve where it had previously been crushed gave relief and the patient left hospital. A month later he again had diaphragmatic flutter and hysterical hemiplegia.

In 1940 the man came under the care of Goodman. Again the first impression was of acute coronary occlusion. Distress was severe, and morphine gave little relief. The patient lay on his right side, grunting audibly with each breath. Periodically he winced and clutched his left breast as at an acute exacerbation of pain. "In spite of his apparent great distress he was able to give a fairly detailed account of his heroic exploits as a deep sea diver." On previous occasions it had been as a Texas deputy sheriff chasing bandits, or as a trapper and miner. Examination revealed little abnormal in the cardio-vascular system, but marked tenderness of the precordium. Over the whole chest could be heard a rapid, "tapping, somewhat shuffling sound" of regular rhythm and a rate about 300 per minute. This sound was most distinctly heard over the lower part of the right side of the chest. In this same region could be seen a rapid pulsation of the intercostal spaces apparently synchronous with the sound. Fluoroscopy showed that this sound was produced by a rapid fluttering motion of the right leaf of the diaphragm, superimposed on the normal respiratory excursions, and having an excursion of about one centimetre. The left half of the diaphragm was high and immobile, apparently completely paralysed by the earlier avulsion of the left phrenic nerve. A stethoscope was fixed to the chest wall and a simultaneous stethogram and electrocardiogram were taken. The former showed oscillations corresponding to the rapid shuffling sound, the latter an essentially normal tracing. The scar in the neck that indicated the position of the right phrenic nerve was then sprayed with ethyl chloride in an attempt to freeze the nerve. Within ten seconds the stethogram showed that the flutter had ceased; within twenty seconds the right side of the diaphragm had become high and immobile; within thirty seconds the patient declared that he was free of pain. Only about a minute later, however, he became conscious of progressive respiratory distress and was soon gasping and slightly cyanosed, and "became quite as frightened as did his medical observers". After about two minutes the right side of the diaphragm resumed its normal respiratory motion without flutter, leaving the patient quiet and comfortable. Goodman expects that the patient will continue to present himself at hospitals throughout the country with this same complaint.

This unusual condition raises several questions of interest. The first is that of causation. Certain observers suggested that the patient was a morphine addict, who presented himself at various hospitals with a painful complaint in order to obtain the drug that would satisfy his craving. Goodman rejects this explanation, for morphine gave the patient little relief, and when his paroxysm had ceased he was quite happy without the drug. The author suggests an hysterical basis for the phenomenon. It is certainly true that the recurrence of hemiplegia of short duration is in keeping with this diagnosis, and there is no doubt in the minds of several observers that this is the explanation of the man's paralysis. It is very unusual, though probably not impossible, to have so rapid and rhythmic an expression of hysteria. Goodman also points out that diaphragmatic tics, fairly rare as they are, most often follow as sequelæ to *encephalitis lethargica*. It seems likely, though Goodman does not suggest it, that this disease is by no means an improbable explanation of the incidents described above. It could account for the decidedly strange behaviour of the patient and afford a possible pathological basis for the respiratory dysfunction. Behaviour and respiratory function figure prominently in the manifestations of the post-encephalitic syndrome, and even if the patient had been able to give a reliable history the absence from it of a definite attack of

[1] *The Journal of the American Medical Association*, April 12, 1941.

encephalitis would not have excluded this possibility. The second matter of interest is the distribution of the pain, which apparently was to the precordium, and on the earlier occasions to the left arm. The nerve supply of the diaphragm is twofold. The phrenic nerves supply the central part and the lower intercostal nerves the peripheral portion. Referred pain through the phrenic nerve is felt in the shoulder of the same side, and perhaps can overflow into the arm. Pain referred through the intercostal nerves is felt in the corresponding segments of the trunk, either back or front, and certainly can spread to the opposite side of the body. It seems most likely then that the pain which the patient felt on the earlier occasions in the precordium and left arm, was produced through the left intercostals and the left phrenic nerve. But how pain originating in flutter of the right leaf of the diaphragm can be localized only in the precordium is difficult to understand. The motor nerves subserving the flutter probably included both phrenics and intercostals, for although interference with the phrenics temporarily stopped the movement, it recurred in a remarkably short time. Thus one month after the right phrenic nerve had been cut the flutter recurred, even though the left phrenic nerve had been previously avulsed. A possible alternative explanation is the existence of an accessory phrenic nerve. A final point of interest is the use of ethyl chloride through the skin to cause temporary phrenic paralysis. Goodman suggests the possible use of such a measure to relieve intractable hiccup or other diaphragmatic tics. Of course in his case the nerve was easily localized by the scar of the earlier operation; if one could feel certain of the position of the nerve without such help Goodman's suggestion might well be successfully practised.

British Medical Association News.

SCIENTIFIC.

A MEETING of the South Australian Branch of the British Medical Association was held on February 27, 1941, at Adelaide.

Varicose Veins.

DR. A. BRITTEN JONES, on behalf of DR. A. HOBBS, read a paper entitled "The Treatment of Varicose Veins and their Complications" (see page 776).

DR. A. C. MCEACHERN said that those present were indebted to Dr. Allan Hobbs for the instructive and useful paper that he had made available to them. He hoped that their appreciation would be conveyed to Dr. Hobbs in due course. Dr. McEachern said that thanks were also due to Dr. Britten Jones for his reading of the paper.

Dr. McEachern confessed to having been greatly discouraged by recurrences after injection; but Dr. Hobbs's and other papers had greatly renewed interest in these cases, and Dr. McEachern could testify that the application of the principles outlined by Dr. Britten Jones would at once produce an improvement in results. In the light of this renewed interest Dr. McEachern wished to emphasize one or two points, and the first was the need for general examination of the patient. This was exemplified by the case of a young man who had been unsuccessfully treated for varicose veins and ulcers at a hospital out-patient department; later it was discovered that the veins extended onto the abdominal wall. The patient had caval obstruction from some unknown cause. In practice Dr. McEachern had found the various tests somewhat confusing when they were used in conjunction with the same patient. He thought that it was simpler and equally effective to draw the main conclusions from one sound well-tried test and to remember the general principle that what a tourniquet could do a ligature could also do. The filling time furnished all the information required. If a tourniquet was needed in the upper part of the thigh to prevent filling of a group of veins in the calf, the upper end of the internal saphenous vein was ligated. If a tourniquet was needed in the lower third of the thigh, then in addition to high ligation a ligature was required at that point. If a tourniquet was required just below the knee, then in addition to high ligation a ligature was needed at that level, and possibly ligation of the external saphenous vein would be required as well. If that tourniquet failed to prevent filling, then the large communicating vein at the junction of the upper and middle thirds of the leg was defective. It was in such varices that excision was required in addition to the ligatures mentioned, because that was the easiest way to find and tie the communicating vein.

Dr. McEachern went on to discuss the injection material used with the ligatures. He said that "Ethamolin" was as good as, if not better than, the older preparations. When high ligation and injection were carried out it was desirable to employ some method of disseminating the sclerosing liquid. One method was massage of the vein from above downwards, and another was injection at various levels with a ureteric catheter. The action of the injection material in the leg could be aided by the use of "Elastoplast" or Unna's paste from toes to knee to prevent complete filling of the veins.

DR. BRUCE LAWRENCE said that he was pleased to have the opportunity of repeating what he had said when he opened the discussion on the same subject at a previous meeting of the surgical section. He felt that the method advocated as the procedure of universal choice, namely, ligature at the sapheno-femoral junction, had much to be said against it, until such time as its true value could be assessed against simpler and older methods. This could not be for a number of years yet, as the cases which yielded the failures despite skilful treatment were those in which recurrence took place late, as much as five years or more after ligature, and the new method had yet to stand the test. Early results of lower ligature operation, in his experience, had been equally as good as those claimed by the advocates of the high ligature operation.

Dr. Lawrence argued that the main tributaries were considered as finally disposed of when tied, as though they were single unbranching trunks. There was, however, a continuous venous network making communications between the tributaries of the lower abdominal wall and the thigh, and he had no doubt that, in the worst cases, the best placed blocks would not prevent sidetracking via minute venules of this network, which became enlarged in time with ultimate recanalization of the obliterated varicose veins; this would produce the same long-interval recurrences as constituted the chief failures after lower ligature. The venous valves of the whole lower half of the body were inherently defective in these cases, and the force of gravity did the rest.

All workers on the subject were agreed that the ideal treatment should be ambulatory. Dr. Lawrence had just heard it said that the patients on whom the high ligature operation was practised were kept in bed for forty-eight hours, and many of them were given general anæsthetics, although exercises were commenced as soon as possible. These were his chief criticisms, together with the facts that the operation was relatively a major one and required an incision of at least four inches' length in an obese subject, while a deep and often difficult dissection was required, which left a deep fatty tissue space. This needed to be obliterated, and from it one frequently saw a slight discharge—a moist wound, for the region was notoriously difficult to keep clean. Consequently, for the site of the uppermost ligature Dr. Lawrence preferred a full hand's breadth below the groin. In these circumstances the operation became truly a minor one, which could be performed in the surgery without assistance and without delay in healing, and after it the patient went about his daily business. The vein was relatively superficial in that area, and even in the obese subject it could be felt as a groove; but in difficult cases it could be mapped out on the skin with an indelible dye while the patient remained standing. After this a transverse incision of little more than one inch sufficed to expose the vein completely if a self-retaining "safety-pin" type of retractor was used. After the vessel had been divided and an injection had been made distally, a small injection of lithocaine, usually three cubic centimetres at most, was given proximally with gentle pressure. The wound was closed, and the patient, who had been sitting up, stepped down. Good obliteration of the proximal end occurred and good results were obtained. Dr. Lawrence had had no disasters, nor had he heard of disasters from others who practised this proximal injection. He did not believe that there was much risk that the injection material would be swept up the femoral vein. Three cubic centimetres did not go far, and the flow of blood was retrograde, as the sapheno-femoral valve was invariably defective in common with the lesser ones. There was every prospect of a cure by a simple and rapid procedure, and the high ligature might be reserved for those cases in which the minor and (almost as important a point) inexpensive procedure failed.

Dr. A. Britten Jones, in reply, said that it was with pleasure on his part that he had consented to read Dr. Hobbs's paper, and especially was this so as his views on the subject coincided with those of the author. Dr. Britten Jones had practised the high ligature operation since 1931 in all cases in which there was a positive response to the Trendelenburg test, and confessed that mingled with successes he had had his share of failures. These were mainly due, in his opinion, to a lack of appreciation of the importance and frequency of incompetent communicating veins. Since he had carried out the Oschner-Mahorner test as a routine measure, he was able to select cases in which more than high ligature and injection would be needed for a cure. He felt that the number of recurrences would be considerably reduced by multiple ligations combined with sclerosing injections.

Medical Societies.

THE MEDICAL SCIENCES CLUB OF SOUTH AUSTRALIA.

A MEETING of the Medical Sciences Club of South Australia was held at the University of Adelaide on November 1, 1940.

Methane Production in the Sheep.

MR. A. F. PILGRIM presented a paper entitled "Observations on Methane Production in the Sheep". Mr. Pilgrim stated that observations at the nutrition laboratory of methane production of sheep had been extended in his work to investigate the daily distribution of methane production, and also the effects of fasting and of feeding after fasting on methane production.

It was found that methane production was greatest in the first four hours after feeding and fell throughout the day until the next food brought about a sharp rise.

On the fasting of a sheep methane disappeared in about four days. When feeding was resumed after short periods of fast (four to five days) recovery of methane was complete in three to four days. However, after long fasts (fourteen to fifteen days) there was usually delay in recovery not due to anorexia, and in these cases hydrogen appeared as an initial product. Hydrogen production after long fasts was inhibited by drenching the animal with rumen fluid from a fistulous sheep.

These observations supported the theory that hydrogen was the initial product in cellulose degradation in the rumen and an independent set of organisms used this hydrogen to reduce CO_2 to CH_4.

Chlorophyll.

DR. E. A. HANSON gave an account of recent work on chlorophyll with which he was associated. Dr. Hanson pointed out that chlorophyll, as a pigment, absorbed the necessary energy for the process of photosynthesis:

$$6CO_2 + 6H_2O \text{ is } C_6H_{12}O_6 + 6O_2$$

Most probably it also played a role as an enzyme, splitting the water into H and OH radicals. A CO_2 chlorophyll bond *in vivo*, however, was hardly possible, one of the reasons being that this bond was very weak *in vitro*, whereas the plant bound CO_2 very strongly.

X-ray spectrography of ethylchlorophyllide proved that the pigment nucleus of the chlorophyll was tile-shaped: 15·5 × 15·6 × 3·9 A. The monomolecular film of this substance was actually a two-dimensional crystal, every tile enclosing an angle of 55° with the surface of the buffer solution underneath and all turning their hydrophilic (probably photosynthetically important) cyclopentanon group towards the water. Swelling and viscosity of this monolayer were highly pH sensitive and reversible, as would be expected from the keto-enol tautomeric cyclo-pentanon group, and were also dependent upon the kind of metal substituted for magnesium in the chlorophyll molecule. Magnesium, the metal naturally present, was the most powerful sensitizer, followed by zinc and lead. Phæophytine (metal-free chlorophyll) was insensitive and, for example, copper and iron (present in the animal tetrapyrrols) seemed to influence the cyclopentanon group distinctly differently from magnesium (opposite signs of the electrical charge in measurements of electromotive force of the water-chlorophyll air interface). The monolayer did not react with a carbon dioxide atmosphere, nor was the influence of a carbonate buffer different from other buffer solutions.

Thus magnesium seemed to be the strongest sensitizer for the photosynthetic water-splitting cyclopentanon group. Magnesium was also the last metal in the series providing a chlorophyll bond of sufficient stability.

During photosynthesis carbon dioxide could be bound carbaminically by a hypothetical protein of a hypothetical chlorophyll-protein symplex (as, for example, carbon dioxide actually was bound in hæmoglobin). This would provide a H_2O-chlorophyll-protein-CO_2 molecule within which photosynthesis could run as an intramolecular rearrangement of atoms.

Post-Graduate Work.

THE NEW SOUTH WALES POST-GRADUATE COMMITTEE IN MEDICINE.

THE report of the New South Wales Post-Graduate Committee in Medicine for the year ended December 31, 1940, to the Senate of the University of Sydney has been received.

The following are some of the more important matters discussed in the report.

Despite the difficulties naturally associated with war conditions the Committee maintained its programme of courses of post-graduate instruction. They are set out later in this report and, as will be seen, were well attended. Teaching was done principally at the Prince Henry Hospital Post-Graduate School, except for the course suitable for candidates for examination for Part I of the Degree of Master of Surgery, which was conducted at the University. The clinical aspect of the teaching at the Prince Henry Hospital was somewhat interfered with by the number of infectious cases from the defence forces during the peak period. This has now been overcome by the provision of a new infectious block, which, it is hoped, will be opened about the middle of 1941.

The Committee arranged courses for medical officers of the defence forces and invited them to be present, free of charge, at all other courses arranged by it. Being desirous of making a contribution to Australia's war effort, the Committee informed the Commonwealth Government of its intention to widen its activities to embrace any form of medical teaching for medical men, nurses or lay persons for the duration of the present emergency. In accordance with this scheme, courses were arranged, at the request of the military authorities, for army nurses. The Commonwealth Government has expressed its appreciation of the Committee's action.

A plan for coordination by the Committee with metropolitan hospitals additional to the Prince Henry Hospital has been under consideration, but it was agreed that it should be left in abeyance for the duration of the war.

The Committee recommended to the Senate that a diploma in anæsthesia be established, and submitted proposed by-laws to govern it. These were adopted by the Senate and approved by His Excellency the Governor-in-Council. A programme of a course suitable for candidates for examination for the diploma has been prepared.

On April 9, on behalf of the Committee, the Honorary Secretary, Dr. V. M. Coppleson, gave evidence before the Joint Committee upon Hospitals—Honoraries, Graduands and Patients.

Finance.

It had been proposed that a request be made to the New South Wales Government for a further grant, but as the financial position of the Committee was more satisfactory than had been anticipated, it was decided to leave the matter in abeyance.

Arrangements were made for all interest on investments in the Prince Henry Hospital Fund to be added to the capital as it accrues, and a grant of £200 from this fund was made to the Prince Henry Hospital for the purchase of microscopes.

The university accountant managed the Committee's finances as in previous years; but receipts for fees paid are now issued by the secretary of the Committee, duplicates being sent to the accountant. This is proving a most satisfactory arrangement.

Fees collected on account of lectures and courses during the year amounted to £576.

The Prince Henry Hospital Post-Graduate School.

The Post-Graduate Unit in Medicine.

The Director, Dr. S. A. Smith, has reported as follows:

In spite of the difficulties created by the war and the closure for a considerable period of the major part of the

general hospital to accommodate infectious patients, the Post-Graduate Unit in Medicine was able to carry out its programme for the year 1940.

The course for candidates for Membership of the Royal Australasian College of Physicians was conducted during the months of June and July. Under the circumstances the attendance was satisfactory. Towards the end of the course, for the reasons stated above, clinical material was insufficient; but this difficulty was largely overcome by making use of the records of the hospital, by the very helpful cooperation of the Director of the Post-Graduate Pathology Unit, and by attendance at the Ryde Home for Incurables and the museum of pathology in the University of Sydney. In conjunction with this course, a week-end course in electrocardiography was given in June, which was attended by the candidates for the M.R.A.C.P. and ten other persons. Dr. F. B. Byrom's lectures on "Hypertension and Nephritis", which were incorporated in the course, were made available to other practitioners, ten of whom, including some members of the Post-Graduate Committee, took advantage of this opportunity. These lectures were the subject of highly favourable comment from members of the audience.

A week-end course in medicine in July was very well attended.

The work of the Post-Graduate Unit in Medicine during the past year benefited very considerably by the cooperation of Dr. F. B. Byrom and his staff—a cooperation which is likely to increase in value in the future.

The library seminars and clinico-pathological conferences were continued, and it is gratifying to note that under the circumstances the attendances were excellent. Improved methods, especially in the clinico-pathological conferences, were introduced. I think it is right to say that these activities are proving a useful contribution to post-graduate instruction for the general body of the profession.

At the beginning of the year Dr. Ulric Brown was appointed assistant to the director, and junior fellowships were awarded to Dr. S. Dobell-Brown, Dr. R. L. Jeffrey, Dr. G. A. W. Johnstone and Dr. H. O. Lancaster. The assistant to the director gave invaluable service in the preparation of the material and the organization of the courses that were given, but in the latter part of the year, owing to the depletion of the general resident staff of the hospital, his services were almost entirely lost to post-graduate activities. He was ultimately called up for military service abroad, which has necessitated the severance of his connexion with the medical unit. I would like to pay tribute to his enthusiasm and energy since he has been associated with post-graduate tuition. Three of the medical Fellows, Dr. Dobell-Brown, Dr. Jeffrey and Dr. Lancaster, joined the fighting forces during the year, and Dr. Johnstone, after obtaining the Membership of the Royal Australasian College of Physicians, was appointed to a temporary position in the pathology department while awaiting a call for active service. The unit suffered considerably by the loss of the services of these Fellows, but it is recognized that their departure was inevitable. The absence of an assistant and of Fellows in medicine is likely to prove a severe handicap for the conduct of post-graduate training in medicine for the duration of the war.

The teaching and demonstrations were considerably helped by the renovation and additions to the lecture hall. The lining of the hall and the improvement in its lighting and in the arrangements for projection added to its comfort and value considerably, and the school is indebted to the generosity of the Ladies' Committee, through whose efforts the money for this work was obtained.

It is also indebted to the Chairman of Directors and the General Medical Superintendent for the generous catering, which has contributed so much to the pleasure and comfort of those attending the courses at the Prince Henry Hospital.

It is hoped that some of the difficulties which beset us in the past year will not recur because of the erection of the new infectious section of the hospital and of the opening of the military hospital at Yaralla.

In my opinion the demand for post-graduate instruction in medicine is likely to increase very largely after the termination of the war. It is the hope of the medical unit that it will be able during the war period to make preparations for that future time when the demands upon the school will be considerably increased.

The Post-Graduate Unit in Surgery.

The Director, Dr. H. R. G. Poate, has reported as follows:

The year 1940 has proved very disappointing in so far as the development of the Post-Graduate School is concerned, due primarily to two factors—(*a*) the war and (*b*) the great influx of infectious cases, which necessitated the closing of the major portion of the general part of the Prince Henry Hospital for several months.

Applications for Fellowships in Surgery were numerous, and a first-class team of young men was selected in the persons of Dr. Kevin Fagan as senior Fellow, and Dr. E. V. Barling, Dr. John Loewenthal, Dr. R. Melville and Dr. T. E. Wilson, the last-named coming from Melbourne and having a brilliant academic record. However, within a few months Dr. Barling, Dr. Loewenthal and Dr. Melville were called up for military service with the Australian Imperial Force, and while wishing them godspeed and a safe return, we were reluctant to lose them. Dr. Fagan and Dr. Wilson carried on very efficiently and happily for the year.

The position brought about by the influx of infectious cases was disastrous and for several months no post-graduate tuition could be given because of the lack of clinical material and the absence of most of the associate honorary staff, who had no work to do in the hospital. Despite these adversities the record of work done is creditable and shows the need there is for a continuance of the post-graduate school.

For the M.S. I there were seventeen who attended the course in whole or in certain sections. Two week-end courses in surgery were held, at which the attendances were fair. In anæsthesia five graduates received detailed instruction and, in addition, the lecturers in anæsthesia, assisted very ably by Dr. L. T. Shea, the Fellow in Anæsthesia, gave all members of the resident medical staff individual instruction. External students also attended for tuition in general surgery, operative technique, urology, orthopædics and for research. Regular library seminars and clinico-pathological conferences were held and have now become an established feature of the school; and that they are well appreciated can be judged from the interested audiences. In order to assist the Commonwealth Army Medical Services, three courses in military medicine and surgery were held, at which the attendances of medical officers were excellent, and four courses for army nurses had a full quota of twenty-five at each course.

When one considers that the dislocation in the general hospital section was caused by the failure of the military authorities to provide hospital accommodation for cases of infectious diseases among the soldiers, who were all sent to the Prince Henry Hospital, we can regard this disruption of our routine as another part of our war effort.

The advent of Dr. F. B. Byrom, as director of the pathology unit, was a bright spot in the year, and he has proved a never failing support and help in our post-graduate activities in the hospital.

With the building of the first part of the new infectious section, we hope that any serious upset in the general services of the hospital will be avoided in the future.

A word of thanks and praise should be given to the excellent work done by the two remaining Fellows in Surgery, Dr. Kevin Fagan and Dr. T. E. Wilson, and by the Fellow in Anæsthesia, Dr. L. T. Shea, who surmounted all difficulties and carried out both their hospital and post-graduate duties in a highly creditable fashion.

The Post-Graduate Unit in Pathology.

The Director, Dr. F. B. Byrom, has reported as follows:

Dr. F. B. Byrom took up his duties as Director of the Post-Graduate Pathology Unit on March 27. The new animal house, post-mortem room and extensions to the east end of the pathology block have since been completed, and when equipped will permit extension of the research activities of the department. To foster these activities an advisory committee was appointed by the hospital board, consisting of the Chairman of the Board of Directors, the Honorary Treasurer of the hospital, the Chairman of the Post-Graduate Committee, the Directors of the Post-Graduate Medical and Surgical Units of the hospital, Professor Keith Inglis and Professor H. K. Ward. All meetings of this advisory committee will be attended by the general medical superintendent and the Director of pathology.

As yet the department has no endowment for research, but the director is indebted to the National Health and Medical Research Council and to the Royal Australasian College of Surgeons for grants in aid of research. The former contributed the sum of £125 towards work on experimental hypertension and on problems related to substitutes for whole blood for transfusion. The latter contributed £200 for the construction of apparatus for studying the problem of drying blood plasma on a clinical scale. The latter is nearly complete and should shortly be in operation, but the above activities have been handicapped by the absence of the assistant director on military service. The museum of pathological specimens collected by the assistant director is being steadily extended and the nucleus of a collection of histological slides for teaching has been formed. Use has been made of this material at the monthly clinico-pathological conferences and demonstrations have been given

during week-end courses and courses for higher medical and surgical examinations.

The triple function of the unit, to maintain a high standard of routine, to provide teaching facilities and to form a centre for original research, imposes a difficult task on the present medical staff of the department. Substantial additions to this staff will be necessary when normal conditions are restored.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 114, of June 12, 1941.

AUSTRALIAN MILITARY FORCES.

AUSTRALIAN ARMY MEDICAL CORPS.

Northern Command.

First Military District.

Colonel D. G. Croll, C.B.E., V.D., from the Reserve of Officers (A.A.M.C.) is appointed to command a General Hospital, 10th March, 1941.

Major L. A. Little is appointed to command a Field Ambulance and is granted the rank of Lieutenant-Colonel (temporarily), 18th March, 1941.

Honorary Major M. S. Patterson is appointed from the Reserve of Officers (A.A.M.C.) and to be Major (provisionally), 10th March, 1941.

The date of appointment of Captain (provisionally) Q185306 K. W. Priddis which appeared in Executive Minute No. 11/1941, promulgated in *Commonwealth Gazette* No. 16 of 1941, is amended to read 30th July, 1940.

Reserve of Officers.—The commission of Honorary Captain S. A. C. Watson is terminated.

To be Honorary Majors.—Captains G. A. C. Douglas, O.B.E., W. Grosse, P. A. Earnshaw and Honorary Captain M. Geaney, 15th April, 1941.

Eastern Command.

Second Military District.

Honorary Major E. W. Frecker is appointed from the Reserve of Officers (A.A.M.C.) and to be Major (provisionally), 16th April, 1941.

Honorary Captain P. B. Lynch is appointed from the Reserve of Officers (A.A.M.C.), and to be Captain (provisionally), 30th April, 1941.

To be Captains (provisionally).—Robert Mandeville Alcorn, 6th August, 1940, and Henry Lawrence Tonkin, 30th April, 1941.

Reserve of Officers.—The resignation of Captain W. L. Corlis of his commission is accepted, 5th May, 1941.

To be Honorary Captains.—Montagu Vernon Mutton, 21st February, 1941, Peter Waring Gill, 30th April, 1941, and Edward John Trevor Giblin, 1st May, 1941.

Southern Command.

Third Military District.

Lieutenant-Colonel G. A. Penington from the command of a Cavalry Field Ambulance is appointed Assistant Director Medical Services of a Cavalry Division, and is granted the rank of Colonel (temporarily), 1st February, 1941.

Honorary Captain R. H. Boyt is appointed from the Reserve of Officers (A.A.M.C.) and to be Captain (provisionally), 1st May, 1941.

Fourth Military District.

Honorary Captain J. H. Johnston is appointed from the Reserve of Officers (A.A.M.C.), and to be Captain (provisionally), 30th April, 1941.

Sixth Military District.

Major (Temporary Lieutenant-Colonel) J. S. Reid relinquishes command of a Field Ambulance and the temporary rank of Lieutenant-Colonel and is transferred to the Retired List (in lieu of the notification respecting this officer which appeared in Executive Minute No. 60/1941, promulgated in *Commonwealth Gazette* No. 63 of 1941).

Western Command.

Fifth Military District.

Honorary Captain H. H. Wilson is appointed from the Reserve of Officers (A.A.M.C.) and to be Captain (provisionally), 15th February, 1941.

The date of appointment of Captain A. A. Merritt, appearing in Executive Minute No. 65/1941, promulgated in *Commonwealth Gazette* No. 73 of 1941, is amended to read 29th January, 1941.

Reserve of Officers.—To be Honorary Captains.—Alexander Breckler and William Blair Christie Gray, 26th April, 1941.

Seventh Military District.

Captains (provisionally) J. H. Coles and J. M. Wilshire are transferred from Australian Army Medical Corps, 2nd Military District, 1st March, 1941.

Captain (provisionally) N107651 J. M. Mack is transferred from Australian Army Medical Corps, 2nd Military District, and to be Major (temporarily), 1st March, 1941.

To be Major (temporarily).—Captain (provisionally) P. Tillett, 1st March, 1941.

To be Captain (provisionally).—Paul Tillett, 28th February, 1941.

ROYAL AUSTRALIAN AIR FORCE.

Citizen Air Force: Medical Branch.

Flight Lieutenant T. G. Millar is granted the rank of Temporary Squadron Leader, with effect from 10th March, 1941.

Flight Lieutenant A. J. W. Ahern is granted the acting rank of Squadron Leader, with effect from 1st January, 1941, whilst employed at No. 1 Hospital, Laverton.

Flight Lieutenant G. B. Morris is transferred from the Reserve to the Active List, with effect from 5th May, 1941.

The following are granted commissions on probation with the rank of Flight Lieutenant, with effect from 5th May, 1941: Lando Lucas Edwards, M.B., B.S., and Glencairn Mackintosh, M.B.

LECTURES ON ARMY MEDICINE AT ADELAIDE.

A COURSE of six sessions of lectures and demonstrations will be held at Adelaide during the next three months. The meetings will be held at the Institute of Medical and Veterinary Science, Frome Road, Adelaide, in the mornings and afternoons of July 6 and 20, August 10 and 24, September 14 and 28. All officers of the reserve and active lists, Australian Army Medical Corps, Fourth Military District, are expected to attend. Members of the Australian Army Nursing Service, senior non-commissioned officers of the Australian Army Medical Corps, medical practitioners and students are also invited. The programme for the first two sessions is as follows.

Sunday, July 6, 1941.

10 a.m. to 12.30 p.m.—Major J. S. Verco: "Observations on Medical Radiology"; Lieutenant-Colonel L. O. Betts, O.B.E.: "Military Orthopædics"; Captain L. W. Linn: "Foot Infections in Soldiers".

2 p.m. to 4.30 p.m.—Major P. S. Messent: "New Ideas in War Surgery"; Major C. R. V. Wright, M.B.E., M.C.: "Unit Training"; Major F. L. Wall, M.C.: "Man Mastership".

Sunday, July 20, 1941.

10 a.m. to 12.30 p.m.—Captain D. O. Crompton: Lecture-demonstration on intravenous therapy; Dr. Helen Mayo, O.B.E.: "Blood Transfusion—The Red Cross Scheme"; Captain J. F. Funder: "The Army Dried Serum Scheme".

2 p.m. to 4.30 p.m.—Symposium: "The Dysenteries". Colonel A. R. Southwood, E.D.: epidemiology; Captain G. A. Lendon: clinical features; Professor J. B. Cleland: demonstration of laboratory specimens.

CASUALTIES.

ACCORDING to the casualty list received on June 18, 1941, Captain K. J. J. Dorney, A.A.M.C., of Elwood, Victoria, is reported missing.

MEDICAL WAR RELIEF FUND.

THE following is an eighth list of contributions to the Medical War Relief Fund established by the Federal Council of the British Medical Association in Australia for the relief of distressed medical practitioners in Great Britain.

Victoria.

£10 10s.: Dr. L. H. Albiston, Dr. W. R. Griffiths and Dr. Mary Skewes (joint contribution), Dr. Kenneth McLean, Dr. F. G. Stephens and Dr. E. R. Crisp (joint contribution), Dr. H. Hume Turnbull, Dr. E. Graeme Robertson.

£10: Dr. C. J. Officer Brown.
£7 7s.: Dr. J. C. P. Strachan, the Victorian Medical Women's Society.
£5 5s.: Dr. B. A. Baker, Dr. Lucy M. Bryce, Dr. R. Davidson, Dr. J. C. Douglas, Dr. W. T. Greening, Dr. E. Guymer, Dr. M. R. Healy, Dr. S. Hills, Dr. S. Humphreys, Dr. G. T. James, Dr. Jacob Jona, Dr. L. Scott Latham, Dr. R. F. O'Sullivan, Dr. H. E. Pearce, Dr. W. Pryor, Dr. C. C. Reid, Dr. C. E. Richardson, Dr. A. C. Salter, Dr. E. Sheil, Dr. G. Simpson, Dr. W. Sloss, Dr. P. Smith, Dr. A. L. Thom.
£5: Dr. N. Longden.
£3 3s.: Dr. W. W. Chaplin (additional), Dr. C. H. Fleming, Dr. S. Pern, Professor S. Sunderland.
£2 2s.: Dr. J. M. Andrew, Dr. J. Barnaby, Dr. B. W. Cohen, Dr. B. Deans, Dr. S. C. Fitzpatrick, Dr. R. P. Gurry, Dr. J. C. M. Harper, Dr. E. McDonald, Dr. L. L. Phillips, Dr. W. A. Spring.
£1 1s.: Dr. J. Adrian, Dr. W. J. Craig, Dr. S. L. Fredman, Dr. F. G. Middleton.
10s. 6d.: Dr. F. R. Kerr.

Western Australia.

£5 5s.: Dr. R. H. Crisp, Dr. O. Corr, Dr. H. K. Lotz.
£3 3s.: Dr. J. C. Bennett, Dr. W. K. Collins, Dr. W. K. Peacock.
£2 2s.: Dr. D. McWhae, Dr. J. O'Donnell, Dr. J. A. Love, Dr. H. L. Chester, Dr. S. Boyd.
£1 1s.: Dr. H. G. D. Breidahl and Dr. D. Wilson (joint weekly contribution), Dr. J. P. Kenny, Dr. D. C. Wilson, Dr. G. Dalla Torre, Dr. N. Williams; Dr. H. G. D. Breidahl and Dr. D. Wilson (joint weekly contribution).

Corrigendum.—In the Western Australian list published in the issue of June 7, 1941, the amount contributed respectively by Dr. T. C. Boyd, Dr. J. E. McGlashan, Dr. C. Fortune, Dr. F. H. Ebell and Dr. G. R. Troup should have been £2 2s. and not £2 as stated.

Nominations and Elections.

THE undermentioned have applied for election as members of the South Australian Branch of the British Medical Association:

De Vedas, Jack, M.B., B.S., 1938 (Univ. Adelaide), South Terrace, Adelaide.
Gratton, Marshall Gladstone, M.B., B.S., 1941 (Univ. Adelaide), Scotch College, Mitcham.
Reid, Max Bertram, M.B., B.S., 1937 (Univ. Adelaide), Uraidla.

The undermentioned have been elected members of the South Australian Branch of the British Medical Association:

Dorman, John Ernest, M.B., B.S., 1941 (Univ. Adelaide), Port Wakefield.
Kennedy, Josephine Margaret, M.B., B.S., 1939 (Univ. Adelaide), 58, King William Road, Hyde Park.
Horman, William Dinwoodie Ackland, M.B., B.S., 1941 (Univ. Adelaide), Royal Adelaide Hospital, Adelaide.

Medical Appointments.

Dr. Archibald John Aspinall has been appointed a Member of the Board of Health, New South Wales.

* * *

Dr. Herbert Ronald Robinson Grieve and Dr. George Moncrieff Barron have been appointed Members of the New South Wales Medical Board, in pursuance of the provisions of the *Medical Practitioners Act*, 1938-1939, of New South Wales.

* * *

Dr. William Christie has been appointed a Member of the Advisory Council of Education, under the *Education Act*, 1915-1935, of South Australia.

* * *

Dr. Frank Victor Gordon Scholes has been appointed a Member of the Commission of Public Health for Victoria.

* * *

Professor Harold Addison Woodruff and Dr. Paul Greig Dane have been appointed Members of the Zoological Board of Victoria, in pursuance of the provisions of the *Zoological Gardens Act*, 1936, of Victoria.

Books Received.

"Gastric and Duodenal Ulcers", by H. Avery, D.Sc., M.B., M.R.C.P.; 1940. London: John Bale and Staples Limited. Demy 8vo, pp. 118, with illustrations. Price: 7s. 6d. net.

"A Text-Book of Surgical Pathology", by C. F. W. Illingworth, M.D., Ch.M., F.R.C.S., and B. M. Dick, M.B., F.R.C.S.; Fourth Edition; 1941. London: J. and A. Churchill Limited. Medium 8vo, pp. 736, with 300 illustrations. Price: 38s. net.

"A Surgeon's Autobiography", by H. Young; 1940. New York: Harcourt, Brace and Company. Medium 8vo, pp. 566, with over 100 drawings and 3 colour plates. Price: 30s. net.

"Inter-Relation of Abdominal Diseases", by E. Forrai, M.D., L.R.C.P., with a foreword by A. Hurst, M.A., D.M., F.R.C.P.; 1941. London: William Heinemann (Medical Books) Limited. Demy 8vo, pp. 183, with diagrams. Price: 12s. 6d. net.

Diary for the Month.

JULY 1.—New South Wales Branch, B.M.A.: Council (Quarterly).
JULY 2.—Victorian Branch, B.M.A.: Branch.
JULY 2.—Western Australian Branch, B.M.A.: Council.
JULY 3.—South Australian Branch, B.M.A.: Council.
JULY 4.—Queensland Branch, B.M.A.: Branch (Ordinary).
JULY 4.—Victorian Branch, B.M.A.: Legislation Subcommittee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

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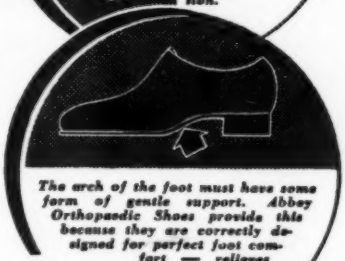

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